

ASTHMA *and* HAY FEVER

by BERNARR MACFADDEN

Asthma and Hay Fever are probably the most miserable, nagging and unpleasant abnormalities with which one can be afflicted. And to make the matter worse, the sufferer is usually told, that his troubles, though not fatal, are incurable.

Such is far from the truth. The great majority of cases of Asthma and Hay Fever are curable—by using the proper methods.

The treatments for Asthma and Hay Fever, and the splendid health knowledge contained in this book will enable you to analyze your own particular case and treat it so that you can remove the underlying causes and thereby affect a permanent relief.

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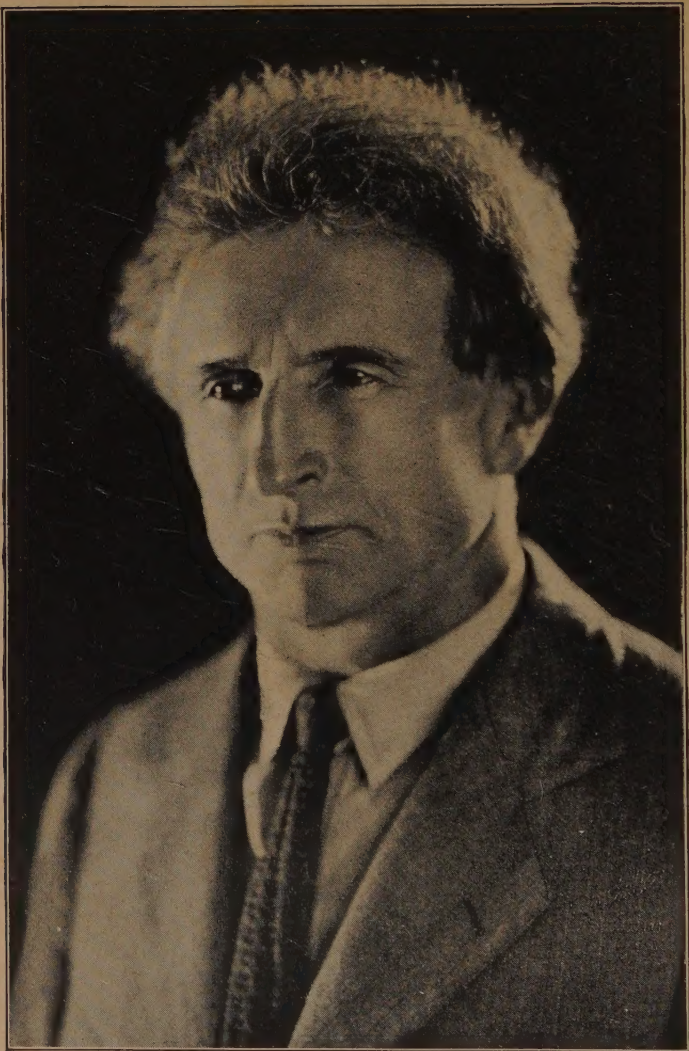
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ASTHMA
AND
HAY-FEVER



Portrait of the Author

Asthma *and* Hay-Fever

BY

BERNARR MACFADDEN

AUTHOR OF MACFADDEN'S ENCYCLOPEDIA OF PHYSICAL CULTURE,
STRENGTHENING THE NERVES, STRENGTHENING THE EYES, HAIR
CULTURE, CONSTIPATION, TOOTH TROUBLES, MIRACLE OF MILK,
DIABETES, HEADACHES, STRENGTHENING THE SPINE, FOOT TROUBLES,
AND OTHER WORKS ON HEALTH AND SEX

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PREFACE

ANYONE who has ever been afflicted with asthma or hay-fever or has been associated with people troubled with these diseases, knows that these two ailments are, with the possible exception of extreme pain, the most miserable, nagging and unpleasant abnormalities with which one can be affected. The anxiety, desperate difficulty in breathing, and sense of suffocation that are a part of asthma are nearly matched by the persistent sneezing and the burning and weeping of the eyes and nose in hay-fever. And to make the matter still worse the patient has to face the unpleasant realization that his troubles, though not fatal, are incurable according to medical standards. To be sure, a change of climate may give some relief in asthma and may even produce a total cessation of symptoms in hay-fever; but that the diseases are not cured is evidenced by the fact that a return to the former place of abode is followed by a recurrence of symptoms. The use of some particular drug also may give partial

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relief, but a cure is as far away as ever. For these reasons and because they are both abnormalities of the respiratory tract and have fundamental causes in common, I am considering them together in this book.

But at the outset I wish to assure my readers that these conditions are not incurable when the right methods are used. Not only will the symptoms be relieved, which is the most that can be expected under medical treatment, but, in most cases, the conditions causing the symptoms will be corrected so that permanently one will be rid of his disease.

After all, there really are no incurable diseases. People have recovered from all sorts of ailments, and what one can do, another can do if he is sufficiently determined, and uses the right methods. Some patients are incurable, not because of the nature of their diseases, but because of their mental attitude and refusal to make the effort to get well. Don't be one of these incurables. Nothing can fully compensate for ill health, but good health will compensate for many things. Make up your mind that you can get well, that you will get well, and then put your reso-

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lutions into practice; and nothing can stop you from achieving your rightful heritage of health.

In order to do this, however, you must understand the laws of being. You must learn how to live. You must come to appreciate the true nature of disease, in order that you may lose your fear of it; and you must learn how the body functions, in order to have a proper respect for its intelligence and power, and in order that you may avoid those things that interfere with its normal functioning, which is health.

What is commonly known as "disease" is nothing but an aggregation of symptoms tagged with a name. *The symptoms are not the disease*—remember that. The symptoms are the manifestation of the body's efforts to get well, the real disease being an accumulation of impurities in the system, brought about by a wrong habit, or habits of living. When you have symptoms, think of them as being beneficial and helpful in removing the true disease. This does not mean that you should not try to remove symptoms, but that you should not fall into the common error of treating symp-

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toms without regard for causes, and then fondly imagining that you are well if the symptoms disappear for a time. Unless you remove causes and learn how to live you are building your house of health upon the sands and the first wind of physical or mental adversity will destroy it; in fact, one is not building a house of health by such negligence, but a house of disease.

The treatment that I shall suggest in this book will be directed toward the removal of causes as well as toward the amelioration of symptoms, and the practice of these methods will in itself teach you much of right living. Then when your health is restored it will be founded on a rock—the rock of knowledge—knowledge of how to live!

Everyone should understand the structure and functions of his body. You could not expect a job as pilot in the air mail service if you were not thoroughly familiar with all parts of an airplane. You have the job of pilot of your body thrust upon you, and the sooner you make a study of your job, and of the body machine you pilot, and become familiar with them, the better for you. I shall

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not attempt in this volume to give a full discussion of anatomy and physiology, but I shall cover the main points of the structure and function of the respiratory tract so that you will be better able to understand how certain causes operate to produce asthma and hay-fever and how certain treatments and methods of living will correct those abnormalities. After covering these matters I shall consider asthma and hay-fever separately and in considerable detail.

I can assure you that if you will study the requirements of your body for normal functioning and health and give a fair deal to your body you certainly can completely recover from either asthma or hay-fever.

Pernarr Macfadden

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ASTHMA AND HAY-FEVER

CHAPTER I

Anatomy and Physiology of the Respiratory Tract

CONSIDERING the situation of the respiratory tract, its complexities of structure, and the number of coördinated movements and activities necessary to the function of respiration, it is a wonder that this part of the body is not more often diseased than it is. But Nature, as usual, has been both kind and careful and has provided various safeguards to protect the tract from the contamination of foreign matter. Unfortunately, many of us go to considerable trouble and expense in an effort to put these safety appliances out of action and to silence the cries of the body, in order that we may en-

joy (?) some habit that we mistakenly imagine to be pleasurable—smoking for instance. But let us see how this respiratory tract is constructed and how it works.

The structures making up the respiratory tract are the nose, mouth, pharynx, larynx, trachea, bronchi, lungs, and pleura. The mouth is in some ways really more of an accessory organ of respiration, as it is used for breathing only under special circumstances. Other accessory organs necessary for the function of respiration include the thoracic vertebræ, ribs, sternum, diaphragm, intercostal muscles, and some of the external thoracic muscles.

The nose consists of external and internal portions. The external portion is familiar to all, being composed of two nostrils, called the anterior nares, which are separated by the septum and guarded at their margins by numerous stiff hairs. These hairs help to filter the air, thus keeping out dust and other foreign matter. The septum in this part of the nose is largely composed of cartilage, and it will sometimes become deflected to one side or the other, or irregularities, called spurs, may

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develop on its surface, all of which abnormalities interfere to a greater or less extent with breathing. The outer parts of the nostrils are capable of dilating in order to admit more air when necessary.

The internal part of the nose is composed of two irregular cavities, called the nasal fossæ, which are separated by the septum the same as the nostrils, only in this part the septum is made of bone. The posterior openings of the fossæ are called the posterior nares, and they open into the naso-pharynx. On the outer wall of each fossa are three irregular bony processes, called the superior, middle, and inferior turbinate bones.

The mucous membrane covering these bones may become thickened or the bones themselves may enlarge when there is a chronic catarrhal condition. This makes nasal breathing more difficult and renders one more liable to asthma, hay-fever, and other respiratory affections. The spaces between these bones are called the superior, middle, and inferior meatuses (me-a'-tus-es) or openings, of the nose. They contain small orifices which communicate with various facial bones, and

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the inferior meatus has a small opening where the duct leading from the eye to the nose empties. It is through this duct that tears reach the nose. In certain disease conditions this duct also may permit infections in the nose to extend to the eye, or vice versa. The inside of the nose is completely lined with mucous membrane, which contains many blood-vessels, mucous and serous glands, and many cilia or hair-like processes.

The irregularities of the inner surface of the nose all are for a purpose, as is everything in Nature. They enlarge the area of the surface, thus increasing the amount of warmth and moisture from the blood with which the incoming air comes in contact. This gives the air a more uniform temperature and humidity, so that the lungs are not subjected to unusual conditions produced by the outside atmosphere. The irregularities also direct the air toward the upper portion of the fossæ, where the end-organs of the nerves of smell are located. Thus we are quickly informed of any bad odors which might indicate that there is something in the air or general environment that might be harmful to the lungs or body in

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general. The mucous and serous glands discharge a fluid which keeps the membranes moist and helps to wash away any dust or other impurities that may accumulate in the nose. The cilia have a vibratory movement which helps to push foreign matter toward the anterior nares (pronounced naries, meaning nostrils) from where it can be blown out or otherwise cleaned out.

In addition to the nerves of smell in the nose there are nerves of sensation, which respond to tickling or other stimulation by producing a sneeze. This also is a protective measure. If dust or other foreign matter enters the nose in such quantities that it cannot be washed away by the mucus or blown out with the ordinary expiration, these sensory nerves are irritated, and the sneeze, or violent expiration is produced, thus blowing out the harmful matter. Sneezing during a cold or in hay-fever also helps to clear away the unusual products of elimination which are being discharged by the nasal mucous membranes.

Thus we see that the nose is not merely a passage for the air, but a preparatory chamber where the air is purified, warmed, and

moistened in preparation for its entrance into the lungs.

The mouth is used for breathing only when there is a demand for very rapid respiration or when the nose is occluded by some pathological condition or process. Because it is used as a part of the respiratory tract only in an emergency, and because its structure and functions are fairly familiar to everyone, I shall not enter into a description of it here.

The pharynx, which is the next part of the respiratory tract below the nose and back of the mouth, is a musculo-membranous tube extending from the base of the skull to a point level with the fifth cervical vertebra, where it becomes continuous with the esophagus, which leads to the stomach. It is divided into three parts—the naso-pharynx, that part above the level of the soft palate; the oral part, between the level of the soft palate and the hyoid bone, to which the base of the tongue is attached—that large cavity back of the tonsils that one sees when he looks into one's widely-opened mouth; and the laryngeal part, below the latter level. Throughout it is lined with mucous membrane, as are all parts of the respiratory

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tract. This membrane is ciliated in the nasopharynx, as it is in the nose, but not in the rest of the pharynx. There are seven openings into this part of the respiratory tract—two for the posterior nares, mentioned in the description of the nose; two for the Eustachian tubes, which lead to the ears; one for the mouth; one for the larynx; and one for the esophagus.

As a part of the respiratory tract, the pharynx serves mostly as a simple passageway for air, although the cilia in the nasopharynx help to cleanse the air.

Below and anterior to the pharynx is the larynx. This is a musculo-membrano-cartilaginous "box" which communicates above with the pharynx and below with the trachea or windpipe leading to the lungs. Its walls are composed largely of cartilage, the largest one, called the thyroid cartilage, forming the familiar "Adam's apple." The top of the larynx is closed with a sort of hinged lid called the epiglottis, which remains open when we breathe but closes when we swallow, thus preventing food from entering the windpipe and causing choking. Inside the larynx are the vocal chords, which make possible the pro-

duction of sounds. The larynx is the essential organ of voice; but as we are more concerned with respiration than phonation we shall not consider it here except as a part of the passageway leading to the lungs.

The next part of this passageway is the trachea or windpipe. This is a tube about four and one-half inches long and from three and one-quarter of an inch to one inch in diameter, extending from the lower border of the larynx to the level of the upper border of the fifth thoracic vertebra. It is composed of an external fibrous and an internal mucous coat, between which are a series of superimposed C-shaped elastic cartilages. The open part of the "C" is toward the rear, and this space is filled by a small muscle, one for each cartilage. When these muscles contract they pull the end of the cartilages together, thus making the trachea smaller in diameter. This flexibility of the walls of the trachea is of advantage in loosening and forcing out any foreign material which may have reached it from the outside, or an excess of mucus which may have reached it from some pathological condition in the lungs or bronchi, particularly

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during the special expiration known as a cough. The cough does for the trachea and bronchial tubes what the sneeze does for the nose. This function is further aided by the cilia of the mucous membrane, which act the same as they do in the nose, the naso-pharynx, and parts of the larynx.

At its lower end, the trachea divides into a right and left bronchus (the bronchi). Each of these enters a lung and divides and subdivides, becoming smaller and smaller, and reaching into every part of the lung. In the lungs the larger branches are called bronchial tubes and the smaller ones bronchioles. The bronchi are similar in structure to the trachea; but at their second or third subdivision they lose the rings of cartilage, which are replaced by muscular tissue. The cilia continue to be present on the mucous membranes as far as the alveolar passages. This makes the lungs self-cleansing under all ordinary conditions.

The lungs are the essential organs of respiration. Situated in the chest, they are divided from each other by the heart, large blood vessels, esophagus, and nerves. They are some-

what pyramidal in shape, the upper part of each being known as the apex and the lower as the base. The right lung is the larger, containing three lobes; the left lung contains only two lobes, since it is necessary to allow some room for the heart. The lungs are composed of the branches of the bronchi and their subdivisions and ultimate terminations in lobules and alveoli, blood vessels, lymphatics, and nerves—all embedded in fibrous and elastic tissue. The lobules are collections of alveoli or air cells arranged about the termination of a bronchiole, and give an appearance similar to a minute bunch of grapes. Each lobule is a miniature lung and is completely surrounded by many tiny blood vessels. It is in the air cells of the lobules that the oxygen of the inspired air is given up to the blood and the carbon dioxide is passed from the blood into the lungs, where it is eliminated with the expired air. The lungs are covered with a delicate serous membrane called the pleura, which is also reflected over the inner walls of the chest. The two membranes are separated by a very thin layer of serous fluid which takes up the friction created by the movements of

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the lungs over the inner rib surfaces in breathing.

Before proceeding to a description of the actual process of respiration it will be necessary to turn for a moment to a consideration of the accessory organs of breathing. As stated before, these consist of the thoracic vertebræ, the ribs, the sternum, the diaphragm, the intercostal muscles, and some of the external thoracic muscles. The ribs are so attached to the vertebræ behind, and to the sternum (breast bone) in front, that they can be lifted and rotated outward by the action of the intercostal muscles and those muscles connecting the ribs and vertebræ and the ribs and sternum. This increases the antero-posterior and the lateral diameters of the chest. The diaphragm is an inverted bowl-shaped muscle attached internally to the lower border of the ribs. When it contracts it flattens and thus increases the depth of the chest cavity. The chest and shoulder muscles which help to lift the ribs, and the abdominal muscles which help to force the diaphragm upward may be used when there is a call for unusually rapid and deep or forced breathing.

The actual process of breathing is carried on as follows: When the nostrils dilate and the ribs lift and the diaphragm descends (all as a result of muscular action) the capacity of the lung air space increases so that the contained air is under reduced pressure. Then, since the atmospheric air is under a greater pressure it passively flows into the lungs. When the lungs are full the inner air pressure and outer atmospheric pressure are about equal; but the elastic tissue of the lungs and thoracic walls has been stretched and, as the muscular action of inhaling ceases, this tissue contracts again to its former position, thus forcing the air out of the lungs, by the dropping of the ribs and the raising of the diaphragm.

The entrance of air into the lungs, called inspiration, is made possible by active muscular effort; but the expulsion of air from the lungs, called expiration, is almost entirely a passive result of the elastic rebound of the lungs and chest walls. There is reason to believe, however, that some of the intercostal muscles help in depressing the ribs, especially in deeper breathing, which would make expiration to

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some extent active. Both inspiration and expiration are active in forced deep breathing, for then the external muscles are brought into play. The chest and shoulder muscles lift the ribs still higher so as to permit deeper inspiration; and on expiration the abdominal muscles press inward, forcing the abdominal organs up against the diaphragm so that it rises higher than it otherwise would and thus forces more air out of the lungs. The action of these accessory muscles can be plainly seen during an acute attack of asthma or at any other time when very deep, rapid or forced breathing is required.

There is always some air left in the lungs, however, even after the most complete and forced expiration possible. This is called the *residual air*. (It increases progressively during an attack of asthma until the lungs are distended, because of inability of the expiratory muscles to expel the full amount of inspired air of each breath.) It is not stagnant, but continually is being renewed from the *tidal air*, which is that which flows in and out of the lungs during ordinary inspiration and expiration. The *complemental air* is that

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which flows into the lungs in addition to the tidal volume, as a result of a forced inspiration. The *reserve air* is that which flows out of the lungs in addition to the tidal volume, as a result of a forced expiration. The *vital capacity* of the lungs is the amount of air that can be forcibly exhaled after a forcible inhalation, and includes all but the residual air. This averages about two hundred and thirty cubic inches for an adult male five feet seven inches in height, for an adult female about one hundred and sixty cubic inches. Between five and six feet in height the capacity varies according to the amount of lung development. Chest expansion is not an accurate indication of the capacity of the lungs. The best way to test the lungs is to measure the number of cubic inches with an instrument called the spirometer.

The purpose of breathing is to supply the body with oxygen, which is necessary to all the body processes, and to remove from the body the carbon dioxide which is a waste product resulting from tissue activity. When we inhale fresh air it contains very little carbon dioxide but considerable oxygen. This

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passes through the nose, pharynx, larynx, trachea, and bronchial tubes to the air cells, where nearly five per cent of the oxygen is given up to the blood and nearly four and one-half per cent of carbon dioxide is taken from the blood and passed out with the air as we exhale. The exchange of gases takes place through the walls of the air cells and the walls of the fine blood vessels, called capillaries, with which the air cells are surrounded. The exchange is brought about because of the varying pressure of the gases and the chemical action of the hemoglobin of the red blood cells, which combines with the oxygen from the air. The mechanical motions of breathing also assist the circulation of the blood and lymph.

The function of breathing is one of the most vital activities of the body. Anything which interferes with free breathing (also with the wholesomeness of inspired air) will seriously interfere with the health in every way. The body is already diseased when the symptoms of asthma or hay-fever appear; but because they interfere with free breathing it soon deteriorates still further. Hence, the sooner these abnormalities are removed the better.

Respiration is both voluntary and involuntary; that is, it continues whether we think of it or not, but we also can regulate it consciously if we so desire or if circumstances require it. We therefore have considerable control over our breathing, and if we exercise that control in the proper manner we will do much to keep the respiratory tract in good order. At all times, we should breathe air that is as fresh and clean as possible, and we should consciously breathe deeply for a few minutes every day, in order to ventilate the lungs thoroughly. Also we should avoid the use of tobacco or other drugs; and when possible to avoid them we should not breathe the air contaminated with tobacco or other forms of smoke. But in studying the treatment for asthma and hay-fever you will learn much of the proper care of the respiratory tract.

CHAPTER II

What Is Asthma?

ASTHMA is an expiratory dyspnea; that is, it is a form of difficult breathing, in which the main trouble is experienced in breathing *out*. As one man who still retained his sense of humor in spite of his affliction said, "If I ever get rid of this breath I'll never take another."

Asthma is a Greek word that means panting; this is a proper interpretation of the breathing of the disease asthma only in regard to the somewhat rapid intake of breaths due to the oxygen starvation resulting from the very prolonged exhalation.

The term asthma is sometimes loosely applied to other forms of dyspnea which have some asthmatic characteristics; but it should be used to designate only an expiratory (labored or difficult) breathing brought about through a spasmodic contraction of the mus-

cles in the walls of the bronchioles, which contraction so reduces the size of the bronchial openings that air can pass through only with great difficulty. Owing to the presence of various associated conditions or symptoms, asthma has been divided into a number of varieties; but as far as fundamental causes and the treatment is concerned it makes but little difference which particular form is present. In all genuine cases of asthma the fundamental lesions in the bronchi are present, regardless of the exciting causes or degree of the symptoms.

Some of the forms of asthma are: *alveolar asthma*, in which there is dilation of the alveoli of the lungs, but in most cases the dilation is a result of the asthma and accompanies it only in the later stages; *humid asthma*, in which the expectoration is particularly profuse, but this is simply a matter of degree; and *hay-asthma*, which is due to the same causes as, or is associated with, hay-fever. Then we have the various forms of reflex asthmas, in which the paroxysms are excited by abnormal conditions in other parts of the body. Among these are: *amygdaline asthma*, a reflex asthma excited by disease of the tonsils; *cutaneous asthma*, a re-

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flex from irritation of the skin; *gastric* or dyspeptic (peptic) asthma, a reflex from the stomach; *nasal asthma*, a reflex from the nose; and *sexual asthma*, a reflex from the sexual organs. In some respects hay-asthma also is reflex in character. Occasionally an attack may be brought on by the presence of some particular animal, such as a cat, in which case it is known as *cat asthma*, although the cat has no relation to the real cause of the trouble.

Difficult breathing, somewhat asthmatic in character, but which is due to disease of some other organ rather than of the bronchi, is sometimes called asthma; but these conditions are not true forms of the disease. Among them are: *cardiac asthma*, dyspnea due to heart disease; *renal asthma*, due to kidney disease; *Kopp's asthma*, an affection of the larynx, better known as laryngismus stridulus; *stone asthma*, pressure and pain in the chest due to the presence of calculi in the bronchi; and *thymic asthma*, a disturbance of respiration associated with a persistent and enlarged thymus gland (a neck and upper chest gland associated with the thyroid, in infancy and early childhood). In all these conditions

treatment should be directed toward the affected organs rather than toward the asthma.

It is possible, however, for heart or kidney disease reflexly to produce genuine asthma if the bronchial lesions are already present. Heart diseases also may be a cause of real asthma in susceptible individuals, through interference with the lung circulations with consequent congestion and nerve irritation. This will be further discussed in the chapter on causes.

The only true asthma is *bronchial asthma*, in which there is a hyperemia and swelling of the mucous membrane lining the bronchial tubes, together with a peculiar exudate of mucin, although the spasmodic contraction of the bronchial muscles which actually produces the attacks may be due to irritations from these abnormalities of the mucous membranes or to other causes. In most cases there is a chronic catarrhal bronchitis present before the asthma develops.

There has been considerable controversy as to the exact nature of asthma, but it is now generally believed to be largely a nervous disorder. But as in all other "nervous" condi-

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tions, the trouble lies not so much with the nerves themselves as with the abnormal conditions which are irritating the nerves. When these conditions are sought out, found, and remedied, the "nervous" nerves become normal. Never allow yourself to accept diagnosis of a symptom as being "just nerves". There is an irritation somewhere, which, if not removed, will sooner or later cause much more trouble.

I shall give the most attention in this book to bronchial asthma, as it is the only true asthma. The different degrees and variations, however, will be sufficiently discussed to permit of their adequate treatment, in case the reader has one of these instead of bronchial asthma.

CHAPTER III

Causes of Asthma

MANY people have the idea that there is a different cause for every disease, just as there is a different name. The medical profession is working on this hypothesis and has therefore fostered the idea among laymen. Medical men and scientists are trying to find a specific and different germ for every disease, but it is very unlikely that they will ever succeed. Even if they did, it would not prove that every disease has a different cause, because a little study of physiology will demonstrate the fact that the germ is a result of the disease, although it may be the cause of some of the symptoms.

The more you seek and search for the causes of diseases the more you will find that you cannot but be led back to the same point. Take any disease that you will, pursue it to its ultimate causes, and you will find that wrong

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habits of living are responsible, either in the life of the patient himself or in his ancestors or, as is generally the case, in both. Of course, there are all kinds of wrong habits of living, but it is seldom that one particular bad habit will produce a particular disease. In most cases it takes several causes working together to produce any abnormality. So in the case of asthma it is not any one particular thing that brings it about, but various things. Still, all these various conditions are wrong habits of living.

A person with asthma is very likely to ask, "What have I done to be afflicted in this manner?" And the answer is, "You have not eaten the right food, you have eaten to excess, you have neglected exercise, you have not breathed enough fresh air nor slept enough, you have not bathed in cold water, and you have indulged in destructive habits, emotions, and thoughts."

"But," he may say, "I know lots of people who have lived as I have, and even worse, but they do not have asthma."

"This is where your ancestors and theirs, and your environment and theirs come in," is the reply. "You may have inherited a weakness

of the particular part which is now diseased, because your forbears lived in such a way that that particular organ or structure was weakened. It is an unmistakable truth that the sins (mistakes in living) of the fathers are visited upon the children unto the third and fourth generations. Or your environment may be or may have been such that a certain part of your body is overworked, and an overworked part naturally is the first to break down or to show symptoms or signs of distress. It is possible to overcome the hereditary tendencies or the adversities of environment by right living, but since you have lived wrongly you now suffer. So, after all, it is yourself who is to blame, discomfiting though it may seem to assume the responsibility."

The causes of asthma, as is the case with most diseases, may be divided into two classes: predisposing and exciting; yet the causes in each of these classes usually are some wrong habits of living or a result of such wrong habits. Some exciting causes are accidental, however. For instance, the various things in the environment which may produce a reflex asthma, such as pollen in the air, the presence

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of a cat or other animal, or some chemical, thermic (temperature) or traumatic (direct injury) irritation of the skin. Accidents to the spine also may be exciting causes. But the predisposing causes are the fundamental ones, and these are always improper living. The exciting causes are only those which bring the real condition to light or which determine the particular symptoms that appear. Among the predisposing causes of asthma are: an inherited neurotic tendency; an inherited uric acid diathesis (predisposition); and the faulty living of the patient himself. Spinal lesions may be predisposing as well as exciting causes.

An inherited neurotic tendency is an inherited instability of the nervous system. The parents and grandparents of the afflicted person have lived in such a way that their nerves were more or less continually irritated and as a result the present descendant's nervous system is supersensitive and given to very erratic action on slight provocation. Also such a person often is introspective and given to dwelling too much upon himself, his feelings and his symptoms. Another person may have just as large an accumulation of toxins in the body

and have just as much congestion in the bronchial tubes, but without this nervous susceptibility he would be unlikely to have asthmatic attacks. You will remember that it has been mentioned that the attacks are due to a spasm of the bronchial muscles; and this spasm is, of course, nervous in origin—for the muscles move only under nerve stimulations. On the other hand, without the accumulations of toxins and congestion in the bronchial tubes, the neurotic tendency would be insufficient to produce a genuine asthmatic attack. So the inherited nerve instability is not the only cause and one cannot place all the blame on it.

A uric acid diathesis is merely a tendency to the formation of an excess of uric acid in the body and its presence in the blood and tissues. But what does this amount to? Nothing—if the patient lives rightly. The “tendency” is a result of improper diet and, probably, also lack of exercise and fresh air. If one’s parents fell into these errors their bodies formed an excess of uric acid as a natural result of disturbed metabolism; and your body will do the same if you live in the same way, but not if you live rightly. So that is all a “diathesis”

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amounts to. Nevertheless, if one does have this tendency and fails to live as he should, the presence of the excess of uric acid will strongly predispose to the development of asthma, because uric acid is very irritating to the nerves and the tissues, producing spasmodic action in the first and inflammation in the second.

The gouty diathesis, plus the toxemia that leads to the development of gout, sometimes produces asthma characterized by sudden night attacks, in which there are large amounts of discharge from the bronchial tubes, which is sometimes pink, from seepage of blood from the capillaries. The quantity of the discharge is extreme in some cases. Usually in these cases there are no warning symptoms.

The toxemia of uremia is another cause of asthma. In case of chronic Bright's disease, especially the interstitial (connective tissue) form, the asthma may be extremely severe, and the attacks associated with great terror, which is not present in other forms. In connection with most cases of this form there are also an abundance of pale urine, and very prominent, rigid, and tortuous temporal and radial arteries (in the temple and wrist, respectively).

What may prove to be either a predisposing or an exciting cause of asthmatic attacks is suppression or recession of a chronic skin eruption, especially eczema. If there has been a sudden disappearance of the eruption, from medical applications or other causes, the asthma may be overcome by bringing about a return of the eruption or otherwise increasing the skin activity to a marked degree. Thus we have two of the conditions produced that make an asthmatic attack possible. If one will keep these facts in mind he will be better able to understand why the peculiar symptoms associated with the disease are produced and why some people develop asthma and others acquire some other disease. One will also understand why the chief treatment is directed toward cleansing the system, correcting the habits of living, and producing nerve relaxation. The symptoms will be considered in detail in the next chapter.

I think I have made it plain that these inherited tendencies, originally due to wrong habits of living, will continue to operate as causes of disease only when the improper habits are continued. I have mentioned them because

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they make it necessary for the afflicted person to be even more strict with himself than otherwise, and because they emphasize the importance of avoiding the conditions and errors that I am about to set forth.

One predisposing factor in the causation of asthma that may be considered of prime importance is the disruption of normal relationship between in-breathing and out-breathing. Not excepting the heart action, the regular rhythmic inspiration and expiration of breathing is the most consistent or uniform physiological habit of the body. Health, and no doubt life itself, depends largely upon the rhythmic balance between these two long actions—the intake and the output of air, with practically no pause between the two. In the medulla oblongata, the portion of the brain directly continuous with the spinal cord, is the nervous center that governs respiration—the respiratory center. In this center, from countless ages of evolution, are developed at the instant of birth the normal breathing habits of the body, and organized to perfection in the early years of life. As the pendulum of the clock swings forth and back, so the lungs may be

said normally to swing rhythmically between inspiration and expiration.

Whatever breaks this rhythmic continuity in breathing may in time produce an unnatural habit through its effect upon the medullary center, and result in obstructed or prolonged exhalation. Continued or oft repeated coughing frequently has this effect. Hence, whooping cough and other diseases associated with long spasms of coughing, especially measles, may cause this abnormal habit in the respiratory center. This is because coughing is prolonged and there is forcible expiration, and because these diseases usually develop in childhood, the period of life when the physiological habits are naturally and completely formed.

The confusion of rhythm of the respiratory center's function in time is very likely to make one susceptible to influences of stimuli of various kinds upon certain nerves—stimuli that would not affect one who had not developed the abnormal rhythm or the marked tendency to it. Thus many of the influences, the conditions given as predisposing and exciting causes of asthma now to be mentioned, may be causes of asthma when there is this underlying

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unbalanced rhythm. However, doubtless they are operative in many cases, also where previously the rhythm was practically normal. Therefore, we have another reason for feeding and caring for our children in such a way that they avoid the so-called diseases of childhood. Asthma and other diseases and disorders may be avoided later in life by the adoption of as nearly a natural life as possible for our children. Also, if in early life we have had any of the diseases involving the respiration, especially by severe coughing, we know that we are more susceptible to asthma and other respiratory diseases in later years, and by avoiding the causes to be mentioned it will be possible to avoid these diseases.

Another condition that may be considered a predisposing cause of asthma is the state of sleep. We know that most attacks come on during sleep, usually after one has been asleep for some time and when in the depth of sleep. Because the depth of sleep is apt to be more profound after a hearty meal in the evening, many asthmatics are obliged to eat heartily only at noon, or earlier in the day than the usual evening meal hour, and to eat very

lightly at night. If one has certain food idiosyncrasies or that type of asthma called peptic asthma, the night attacks may be brought on even when the offending food has been taken in the morning. Some asthmatics prefer to remain awake rather than risk their severe attacks. Often they have observed some of their customary warning symptoms and by remaining awake they may be able to prevent severe symptoms from developing, but these will be certain to develop if they fall asleep, after the warning symptoms appear. A queer characteristic with some is their ability to avoid attacks by keeping a bright light burning in the room. It would seem in these cases that darkness itself plays an important part, but most likely unconscious auto-suggestion explains the causative influence of darkness.

The reader, if at all acquainted with any of my writings, may feel that I am going over old ground in calling his attention to errors of diet, neglect of exercise, etc.; but I assume that anyone who reads this book either has asthma or wishes to avoid it. If he has the disease it shows that he has been guilty of these errors

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and they need to be brought to his attention. If he wishes merely to avoid the asthma I could not do better than to call these things to his attention again and again, for they are the most important causes of asthma and, therefore, the most important things to avoid.

Improper diet in many ways may produce conditions favorable to the development of asthma. The diet may lack the necessary elements to nourish properly the nerves or the muscles, thus making it impossible for them to function as they should. It may be excessive in quantity or poorly balanced, so that both digestion and metabolism are disturbed, and as a result the blood becomes thickened with toxins and cannot be properly circulated, particularly through the fine capillaries in the walls of the bronchioles and alveoli. This gives rise to swelling and congestion of the parts, with ultimate inflammation and increase of mucous secretion, which are the conditions necessary to establish a genuine asthma. These abnormalities, of course, will irritate the nerves, the toxins circulating in the blood will further do so, and a spasm of the bronchial

muscles may be produced. If the articles used in excess are meat and eggs, and other concentrated proteins, there is a particularly strong tendency to the production of too much uric acid, although overeating of anything may have this effect through disturbance of the general metabolism.

The use of such substances as tea, coffee, and spices, sometimes mistakenly called foods, also will act as nerve irritants and may produce an attack of asthma, or they may disturb the digestion and circulation, as explained above. Refined foods, from which the vital elements have been removed, starve the tissues, particularly the nerves, and a neurotic condition will be produced, or aggravated if the tendency is already present.

Eating too fast, or eating when under the influence of strong emotions, such as anger, fear, sorrow, worry, etc., or eating when very tired, will upset the digestion, more poisonous by-products will be produced, and the elimination will have to be increased. This often leads to catarrh, and a catarrhal bronchitis frequently is a forerunner of asthma. Constipation results in direct poisoning of the body,

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leads to catarrh and disrupts all of the processes of the body.

Thus you can see that any dietetic error, if continued long enough and especially if combined with other wrong habits of living, may produce the conditions characteristic of asthma.

Neglect of exercise is a very common fault. All of us are so busy doing other things that we imagine we do not have time for exercise. This is a delusion in most cases, because practically always there are a few minutes wasted during the day that might be utilized with beneficial exercising. Even the time spent in arguing with yourself or someone else as to your lack of time would be sufficient to do some good if spent in exercising. If there should be an exceptional case where there is actually no time for exercise, that person had better abandon some of his other activities in favor of exercise, because without a certain amount of muscular activity no one can be healthy.

But how does neglect of exercise predispose to asthma? First, it allows parts of the lungs to stagnate from lack of use. Deep breathing is most frequently produced by exercise, and if

we do not get a certain amount of it the lungs will not be properly ventilated and they will not be sufficiently active to keep them in good condition. Any part that is not used deteriorates and the body tends to deposit morbid matter in these unused parts, where it will be, to some extent, out of the way. The very fact that breathing is limited still further will increase these deposits, because the lungs are important eliminative organs and any limitation of their functions decreases elimination. Wherever we have a deposit of morbid matter we have disease, and symptoms of some kind will arise sooner or later.

Lack of exercise causes every organ of the body to work sluggishly. Circulation and elimination through other organs, as well as through the lungs, are diminished and a toxic condition is produced that irritates the nerves and prevents them from functioning normally. Also, if there is a tendency to disturbed rhythm of breathing, as mentioned previously, lack of exercise is one of the most certain ways to make it more manifest; and proper exercise is one of the best means by which normal rhythm may be established or main-

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tained. With a toxic condition of the body as a whole, morbid matter in the lungs, nerve irritation, and an underlying rhythmic unbalance, we have the stage all set for asthma. Then, too, because of the general weakness and lack of vitality and resistance engendered by neglect of exercise, the disease is still more likely to develop.

I have just discussed the bad effects of insufficient lung activity. Shallow breathing, whether from lack of exercise or merely from habit, is one of the most important causes of asthma. The lungs are the part chiefly affected in this disease, and, therefore, it is extremely important that they be kept in good condition. But this is impossible unless a certain amount of deep breathing is practiced. One swallow does not make a summer, nor will one deep breath develop a good pair of lungs. Persistent practice is necessary. This is best done in combination with exercise; but if you will not exercise, at least do the deep breathing. And be sure that you have plenty of fresh air at all times, whether doing deep breathing or not. Bad air prevents proper lung elimination and proper oxygenation of

the blood, thus again producing the toxic condition and nerve irritation that leads to asthma. When bad air is combined with shallow breathing, trouble is bound to arise before long, and the chances are it will be some disease of the respiratory tract. As a cause of asthma this combination is hard to beat.

It is other wrong habits, no doubt, that make one more susceptible to certain influences, such as sudden changes of temperature, especially regularly and frequently as in some occupations. But where the body is toxin-laden, and below normal, such exposures, particularly when there is no opportunity to change the clothing according to the needs, may disturb every function of the body. Among those affected by such changes of temperature are employees of ice manufactories, refrigerating plants, and packing houses; also bakers and locomotive and stationary engineers, especially in the winter time.

Another important cause is insufficient bathing. This limits skin activity. The skin and the lungs are closely related in many ways. We breathe to some extent through the skin, and if the pores are clogged with dirt,

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whether visible or invisible to the naked eye, this function of the skin cannot be carried on properly. The skin also is an important eliminating organ, and if it does not do its share, more work is thrown on the lungs and other eliminating organs. Excessive accumulation of the products of elimination in and on the skin irritates the millions of nerve endings contained therein, and this irritation is reflexed all over the body. This may be either a predisposing or exciting cause of asthma.

Lack of external cleanliness leads to internal uncleanness, because of the interference with elimination, and again we have the toxic condition that is the basis of all diseases. Many people feel that if they take one warm bath a week they are doing all that is necessary. Others who are somewhat more enlightened, take one or two warm baths a week and a daily cool bath, but often even this is not sufficient. The skin must also have the benefit of dry friction baths, air baths, and sun baths. The more active the skin the less likely will you be to develop asthma. If you already have the disease consider well if this has not been one of the causes.

ASTHMA AND HAY-FEVER

While the lack of activity of various kinds just discussed is often a cause of asthma, still, one cannot be active all the time, a certain amount of rest being necessary. If this is not secured, trouble again will result. The effects of lack of sleep and relaxation are chiefly on the nervous system. The body is operated by "nerve power", and this is recuperated noticeably only during sleep or perfect relaxation. When there is a lack of these the whole body suffers. A neurotic tendency will be markedly increased by loss of sleep, or if the tendency is not present it soon will be developed. Constant tension of the nerves, such as is present when one does not know how, or fails, to relax, is very irritating to the nervous system. Tension is one of the chief things that an asthmatic sufferer has to overcome, as it is one of the most important causes among both predisposing and exciting causes. Sometimes a person will be securing enough hours of sleep, but because he does not relax he fails to secure the full benefit and may still be predisposing himself to asthma. Therefore it is very essential that during sleep one be well relaxed—that in preparation for sleep one can consciously bring

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relaxation to every muscle of the body, then of the mind as well.

The remaining bad habit of living, among the predisposing causes of asthma to which I desire to draw your attention, is wrong thinking. This is the basis of all bad habits, for thoughts of some kind always precede action. The bad habits of tobacco, alcohol, and drugs are products of mistaken thought. The deluded individual uses tobacco or alcohol because he thinks he is securing pleasure therefrom, whereas he is only injuring his body and laying up sickness and suffering. He uses drugs because he thinks they are making his health better, whereas they are only undermining his health. If he reasoned rightly and intelligently from sound premises he would not fall into these habits. But he thinks wrongly, or in many cases does not really think at all but acts on the suggestion of others. Other wrong habits of thinking include harboring, even encouraging anger, worry, fear, and other destructive thoughts and emotions. These are extremely irritating to the nerves, produce tension, aggravate a neurotic tendency, generate poisons in the body,

and waste the nervous energy. In fact, they are direct and potent causes of the toxemia and nerve irritation which lead to asthma. In many respects they are even more powerful poisons than tobacco, alcohol, or drugs. No one ever suffers from asthma unless he has done some wrong thinking and indulged in some destructive emotions.

I have mentioned spinal lesions as possible predisposing causes of asthma. They operate as causes because they interfere with proper nerve control of the external and internal, gross and minute respiratory muscles. They themselves, however, are most frequently due to wrong habits of living. These habits irritate the spinal nerves and produce contractions of the spinal muscles and ligaments, and in time even may pull one of the vertebræ slightly out of position. But these lesions also may be produced by accident, in which case they may be a direct exciting cause of asthma. I have called attention to them because of the possible accidental origin and because they generally require special treatment.

As I have tried to impress upon you, the predisposing causes of asthma produce a toxic

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condition of the body and a general nerve irritation. The toxic condition calls for extra elimination; and when the regular eliminating organs are unable to handle the excess of work the mucous membranes generally are the first to be called upon for assistance. An inflammation and increase in mucous discharge results, one of the most common illustrations of which is a "cold". But the mucous membranes of the bronchial tubes frequently are affected also, particularly when the condition becomes chronic. The inflammation itself irritates the bronchial muscles and the local nerves, and they are further affected by the general irritation. It then needs only some special increase in the toxic condition or in the nerve irritation to produce a spasm of the bronchial muscles. These special conditions are called *exciting causes*. Without them a paroxysm will not occur, but the real disease will be there, nevertheless, as long as the predisposing causes are in operation. It is not safe to depend upon the elimination of exciting causes alone to avoid asthmatic attacks, as these causes often arise so quickly or in such a way as to be unavoidable. The only sure method is to remove

the predisposing causes; and until this is done the disease cannot truly be said to be cured.

The male sex may be considered as a predisposing cause of bronchial asthma, not classed with the foregoing because this is not similar to the preventable causes. The majority of asthma victims are males. This really is unlikely due to the fact that they are males, but because of their greater exposure to the causes of bronchitis—especially cold and damp, and sudden changes in temperature. True spasmodic asthma is found about equally in males and females.

The exciting causes of asthmatic attacks are many, varying in different individuals and at different times in the same individual.

Violent emotion may be an exciting cause in several ways. It suddenly increases the toxemia, irritates the nerves, and produces tension. It produces all the conditions most likely to create an asthmatic attack, and is therefore one of the most important things to be avoided.

A damp atmosphere, particularly in the case of one who is not accustomed to it, may produce an attack, because it decreases skin and lung elimination. The waste retained as a

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consequence may be sufficient to produce the dyspnea.

An orgy of overeating at a particular meal may produce an attack reflexly by irritating the stomach nerves, or it may produce the attack a few hours later as a result of increased toxemia or irritation from indigestion. Overeating thus works as both a predisposing and exciting cause.

Excesses of any kind, such as overwork, overexercise, the use of large quantities of tea and coffee, and even small quantities of tobacco and alcohol, indulgence in worry or sulks or anger, excessive venery, etc., all are very likely to produce asthmatic attacks. They do this chiefly because of the effect on the nerves, but also because they increase toxemia. Some very few cases may find tobacco of value in suppressing an acute attack; but in the vast majority of cases it will be found especially detrimental, because it directly irritates the mucous membranes of the respiratory tract. Even those cases where it helps temporarily in an acute attack will be harmed by it between times; and when it is used regularly between attacks it has little or no effect as a relieving

agent during an attack. It is seldom that some less harmful measure may not be used to give relief and thus make the tobacco entirely unnecessary.

Some particularly susceptible individuals who have the neurotic tendency well developed may have an attack produced by a change of climate, from town to country, or from country to town, or even by a change from room to room. In these cases it does not matter what the change is; so long as there is a change it seems to irritate the nerves, and precipitate asthmatic attacks, though change from a generally more favorable to a generally less salubrious environment may be expected to have a more pronounced causative or exciting action.

Other individuals of a like temperament may be affected by odors of plants or animals. Hay-asthma is an example of the effect of plant odors or pollen, and cat-asthma is an example of the effect of animals; some other animals capable of exciting an acute attack being the dog, horse, and goat. Feathers also may have the same effect.

Fright is a fairly frequent exciting cause,

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as it quickly produces nervous tension and extra-congestion in the lungs, from the interference with the circulation which it creates. Any shock or intense emotional reaction may have a similar effect for the same reason.

Some form of cutaneous irritation, such as a tickling, scratching, sudden application of heat or cold, or a blow may produce an attack of reflex asthma in those who are susceptible to this form of nerve irritation. It usually is the neurotic type of individual who is affected in such manner.

Abnormalities and diseases of the nose and throat, such as colds, catarrh, hay-fever, septal spurs, adenoids, polypi, and affections of the tonsils are particularly liable to produce a reflex asthma. Diseases of the stomach and intestines are frequently exciting causes, as also are diseases of the heart, kidneys, or sexual organs. Any kind of abuse of the reproductive organs is very likely to give rise to an asthmatic attack, especially after the disease asthma is well established, because of the vital depletion, nerve irritation, and strong emotion resulting from habits.

The exciting causes just mentioned may be

and frequently are present preceding an attack, yet an attack may come on without any apparent cause. In fact, attacks occur most frequently, particularly at the start of the disease, at night while in bed, the difficulty in breathing causing the patient to awake. In these cases the exciting cause may be an accumulation of mucus in the bronchioles, because of the stimulation of the flow of mucus from the heat of the bed. When one is up and about, small amounts of mucus may be expelled frequently, or the other eliminative organs carry off so much waste that the mucus collects only in quite normal or unirritating amounts, or the amounts that do collect are kept more or less in motion by the physical activity of the individual. However, when one reclines, and especially after falling to sleep, the respiration is reduced in frequency and it is less forcible, thus allowing the mucus to collect and possibly to undergo some degree of decomposition. This may cause an attack by its bulk or pressure, or by the production of a cumulative nerve irritation. Owing to the inflammation of the bronchioles there is some irritation always present. The nerves will stand

this for so long, but after a while the cumulative effect is enough to produce a spasm. Then an indiscreet evening meal may give rise to irritation a number of hours after eating, particularly if the intestines are diseased or especially sluggish or congested or overloaded. Lack of fresh air in an improperly ventilated bedroom may be a cause. The air might have been fairly fresh on retiring, but it became vitiated after several hours because of lack of adequate ventilation.

If one seeks far enough he always will find both predisposing and exciting causes. The patient often attaches the most importance to the exciting causes, because they more immediately precede the acute paroxysms; but the paroxysm is only a symptom of the real disease, which consists of the toxemia and nerve irritation resulting from the predisposing causes. So, more attention should be given to these latter, although the exciting causes should not be neglected.

The fundamental causes of asthma, then, are—wrong habits of living coupled with a neurotic tendency, and possibly a uric acid diathesis.

CHAPTER IV

Symptoms and Complications of Asthma

THE symptoms of an acute attack of asthma are so severe and distinctive that one is not likely to forget them if they have ever been witnessed or experienced. An asthmatic needs no one to tell him the symptoms—he knows them all too well, to his sorrow. However, a discussion of them here will be of value to those who do not have the disease and will help anyone who has been afflicted to understand his condition better.

As a rule there are no premonitory or warning symptoms of an attack, though some who have had attacks may notice that certain symptoms peculiar to each, such as excessive sneezing or flatulence, will appear as a warning. There are, however, certain conditions which are particularly liable ultimately to give rise to the acute paroxysms.

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Chronic bronchitis is the most important of these. This is an inflammation of the mucous membranes of the bronchial tubes, with swelling and an increased discharge of mucus. It gives rise to a persistent cough which is worse at night, somewhat difficult breathing, and expectoration of a varying amount of mucus. It readily will be seen how this can lead to asthma, if not properly treated. The mucus clogs the tubes, which are already partially occluded from the swelling, and if sufficient nerve irritation is produced from other causes a spasm of the muscles may result so that respiration becomes extremely difficult—and typical asthma is produced! Hence, if anyone has a chronic bronchitis, particularly if he have a neurotic tendency, he should be warned of the possibility of asthma. The symptoms of a bronchitis, therefore, might be considered as warning symptoms of asthma.

The symptoms of heart disease are another group of warning symptoms indicative of the possibility of asthma in the future in many cases. The deficient circulation associated with organic heart diseases, especially mitral

stenosis, produces a congestion in the smaller capillaries throughout the body, but particularly in the lungs and in the bronchial mucous membrane. Where there is congestion it is only a matter of time until inflammation results, and when these changes are created in the lungs, we have a condition very similar to chronic bronchitis. Then, if other causes of asthma also are present, asthma very likely will develop. Heart disease may be a result of asthma, however, as well as a foreshadowing condition. This will be discussed more fully later.

Chronic kidney disease, particularly if associated with dropsy or hardening of the arteries, may act much the same as can heart disease. The toxemia due to defective kidney action thickens the blood and irritates the nerves; the dropsy presses on both nerves and blood vessels; and the hardening of the arteries prevents proper control of the circulation. As the lungs normally are particularly well supplied with blood vessels, the poor circulation resulting from these causes is felt there very strongly, and congestion soon results, with subsequent symptoms as described above.

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I have called these conditions warning symptoms because they indicate that some of the causes of asthma and asthmatic attacks are in operation. Some might prefer to call them causes of asthma; but they are not always present as such and are indirect in effect when they are present, being due fundamentally to wrong habits of living the same as is the asthma; hence I have preferred to call them warning symptoms. Asthma may not develop from them or along with them, but if they are present it is more likely that asthma will result than if they are absent.

Many cases may find the attacks coming on without any noticeable preceding symptoms. They may be awakened some night by a typical attack even though having felt fairly well for some time previous. In all these cases, however, a careful review of conditions will disclose some slight bronchitis or catarrh and a number of sources of nerve irritation, besides the neurotic tendency. In some cases the nervous symptoms are the most marked and in others the catarrhal symptoms are most prominent.

Nocturnal attacks are the most common,

especially at the beginning of the disease. They generally occur between two and four o'clock in the morning. The patient is awakened because of the difficulty in breathing, which soon becomes acute. There is a sense of oppression in the chest, inspiration is short and expiration prolonged and wheezy, but the number of respirations is not much increased. Frequently, so difficult is the breathing, both in and out, but particularly out, that the patient uses every possible mechanical means to assist himself. He sits up, holds his head back and straightens the neck; often he will brace the shoulders against something in order that the accessory muscles of respiration may work the better. Even though these powerful muscles are brought into play, and in spite of the violent efforts, but little air enters the lungs. The face becomes pale and the expression anxious. In a severe attack speech may be impossible, the face perspires and becomes blue, the pulse is small and quick and the extremities become cold. All these symptoms are, of course, produced by the lack of oxygen and the accumulation of carbon dioxide in the blood and cells. Just as the symptoms seem

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to be at their worst stage, the breathing will improve, and there is a paroxysm of coughing which gives relief. A skin eruption sometimes appears during an attack, but this may be in part due to the drugs which frequently are employed to give relief.

The cough at first is very tight and dry and the sputum tenacious. In the cases that are chiefly nervous the cough does not occur until near the end of the attack. Then a few small plugs of mucus are raised. These may be unfolded and it will then be seen that they are molds in mucus of the smaller bronchial tubes. The sputum may be made up entirely of these plugs floating in a small quantity of thin mucus. Sometimes with the naked eye and always with the microscope spiral threads may be seen. These are known as *Curschmann's spirals*. They occur in all true cases early in the attack. Within a few days the sputum usually changes entirely, becoming more like pus, and spirals are no longer found.

An attack may last for a few minutes or for several hours. It may recur in the same night, but as a rule this occurs only in the more advanced cases. Early in the disease the patient

usually is free in the morning, with little or no discomfort. There may be days or months between the attacks. Usually, however, unless prompt treatment of the right kind is adopted, the attacks increase in frequency, there is wheezing and coughing between them, and the symptoms of bronchitis become more marked. In the severe cases the attacks may occur several nights in succession, or even during night and day, and the general health begins to suffer.

Because of the impeded escape of air, the residual air in the lungs increases to such an extent that the chest becomes enlarged and barrel-shaped, there is but little expansion and retraction as in normal breathing, and the spaces between the ribs become much widened. The chest expands so much that ordinary well-fitting clothes become not only too tight, but they fail to meet by from one to three inches. The accessory muscles of respiration are employed even in fairly quiet breathing. The diaphragm is lowered and moves but slightly. The liver, stomach, and spleen are forced downward by the rigid diaphragm that has descended to its limit of downward motion,

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and this distends the upper abdomen similarly to the chest distention. The comparative rigidity of the chest gives the patient a sense of suffocative tightness, as if held in a vise or other outside force. Sometimes there is a pronounced itching of the chin and breast-bone and between the shoulder blades, this coming on early in the asthmatic attack and passing off when the attack is fully developed. Owing to the deficient oxygenation, worry, nervous strain, and loss of sleep, in addition to the wrong habits of living which produced the trouble in the first place, the patient loses weight, becomes gaunt, hollow-cheeked, and sallow. The nervousness is increased and all the functions of the body are disturbed.

In long standing cases emphysema almost always results. This is a dilation and ultimate atrophy of the walls of the alveoli, producing externally the enlarged and round or barrel-shaped chest. Sometimes there is fusion of the air cells. It is brought about by the increased pressure of the air due to the difficulty in expiration and to the violent coughing. The chest is still more enlarged and set and during respiration moves as if in one place.

There is dyspnea on slight exertion, a distressing cough, and some cyanosis (blueness). By this time the asthmatic attacks usually have decreased in frequency but the other symptoms are more marked and more constant.

Other complications of asthma are heart disease, dropsy, tuberculosis, and pneumonia. If heart disease occurs, it is brought about chiefly through overwork in trying to pump the blood properly through the congested capillaries of the lungs. Dropsy is due to the congestion and interference with the circulation so that more or less stasis results, and this permits some of the blood serum to pass through the blood-vessel walls into the tissues. The inflammation and morbid matter in the lungs, together with the lowered vitality from the deficient oxygenation, make the asthmatic a good subject for tuberculosis or pneumonia or any other lung disease.

Death is unknown to occur during an acute attack of asthma as a direct result of the attack, but may result from some of the complications that generally accompany long-standing cases.

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It should be remembered, however, that there is no reason why a case should become a long-standing and serious one if proper treatment is adopted at the outset. Better yet, if people would be willing to live rightly at all times there would be no reason for the development of even the first signs.

One other complication of asthma I must mention before bringing this chapter to a close is the drug habit which frequently is formed when medical methods are employed in suppressing acute attacks, though this is less frequent nowadays than formerly. Morphine frequently has been employed in the acute attacks, and many an unfortunate asthmatic has become a drug addict in this way. It is far better to suffer the asthma if need be than to become a victim of narcotics. There are many other measures that may be used to give relief, and there is no reason why one should suffer for any great length of time.

There is a strong temptation for both patient and physician to employ narcotics, but one always should remember that it is much easier to start than to stop their use. Even if one does not actually become an addict, the

drug will make the cure of the asthma more difficult and the symptoms during the process of cure more uncomfortable and severe. The attacks of asthma may be both more severe and more frequent for a short time after discontinuing the drug. This condition, plus the "let down" from the drug stimulation and the craving for it, complicates the treatment, and particularly undermines the morale of the patient. But if he can be reassured sufficiently to adhere to the proper treatment he may as successfully overcome his asthma as one without the habit, though possibly not within as short a time. Also, his general up-building may be appreciably retarded because of the ravages of the drug.

Most people are inclined to believe that between the attacks of asthma the patient is normal. But because he is liable to paroxysms of the disease at any time, certain of many influences are present, and it should be considered that the asthmatic has his real disease with him at all times. The disease is paroxysmal only in the appearance of the acute attacks; but all the underlying causes are

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maintaining a state of susceptibility to the exciting causes. Hence, the symptoms of asthma include not only those of the acute attacks, but all abnormal states at all referable to the acute attacks that exist between the paroxysms.

CHAPTER V

Treatment of Acute Attacks of Asthma

THE general treatment of asthma—the treatment directed toward the removal of the causes—is, of course, the most important. But as most people are chiefly interested in securing relief from the acute attacks I have placed this chapter first. As a matter of fact, the acute attacks are more in the nature of symptoms of the real disease than are they of the disease itself; but most people are accustomed to considering the symptoms as the disease, since they have been so educated by medical practice. Also, many people have the idea that natural methods are all right for chronic conditions, but if one gets “real sick”—that is, has acute symptoms—one must take drugs. Nothing could be further from the truth. A person surely feels “real sick” when he has an acute paroxysm of asthma, but relief

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can be secured by natural methods. The use of narcotic drugs in this condition is particularly to be condemned as stated in the last chapter.

So, no matter how much you may be in need of immediate relief, give the most attention to the general treatment to be outlined in the next chapter, for it is only by following such a program of treatment that you will be progressing toward a real cure. It is true, however, that the disease cannot be immediately eradicated, particularly in long-standing cases, and that in the meantime some measures for relief of the acute attacks not only are very much appreciated by the patient, but necessary. An acute attack consumes considerable nerve energy, besides greatly hindering the elimination of the accumulated toxins; and anything which will lessen them will be of real value in the cure. Therefore, I present the following measures of which you can make use while you are taking steps to remove the real causes of the disease.

You will remember that the acute dyspnea of asthma is due to a spasmodic contraction of the muscles in the walls of the bronchioles, particularly when breathing out. This prevents

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the proper exit of the air so that fresh air cannot be inspired, the lungs being already nearly full. Another factor in the production of asthma, of the distress, and of the entire picture of the patient in an asthmatic attack is a spasm of the diaphragm and the breathing muscles attached to the ribs. During paroxysms the chest and abdomen are "set" and immovable with little or no heaving and rhythmic expansion as in ordinary or most diseased forced breathing. The diaphragm has descended as in full inhalation, and remains fully depressed. The abdomen is distended and the abdominal muscles firmly contracted, due to the effort of these muscles to overpower the diaphragm and bring about exhalation. These conditions seem to have as much to do with the production of all the phenomena of asthma as do the inner spasms of the bronchioles. This diaphragm contraction explains more readily than the bronchiole spasms the ease of inspiration and almost impossible expiration. For, to allow expiration, the diaphragm in spasm would need to relax, yet partially cramped muscles do not readily relax; but they can be stimulated to greater contrac-

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tion, which is what takes place in inhalation. This condition also explains why the asthmatic, in an attack, refrains as much as possible from coughing, forced talking or laughing, for such actions prevent the relaxation of the diaphragm and even are most likely to increase its contraction. The problem, therefore, is to secure such relaxation that the air in the lungs will be released.

You probably will find that you can do this voluntarily if you set yourself to it. Make up your mind that you are going to relax, no matter how hard it is. Remember that there is no danger of death during an attack, that the attack will pass, and that the more you relax the sooner it will go. Constantly suggest to yourself that you can and will relax. Start by relaxing all the muscles not immediately concerned with breathing and when they are at rest it will be easier to relax the breathing muscles. Just "let go" all over, be still, and try to turn the thoughts to pleasant things. You may not find this easy, but you can accomplish it if you are sufficiently determined and will make a real effort, and when you have succeeded you will have won a real victory. You not only will

have control of the acute attacks but you will have learned how to relax in general, you will have removed some of the nerve tension from which you have been suffering, and you thus will make future attacks much less severe and even less likely. I strongly recommend that every asthmatic give this method a thorough trial.

Very chronic cases may not be able to relax until after considerable practice, so in the meantime they can use any of the following measures. It should be stated, however, that any case will secure more prompt relief by using some of these measures in addition to efforts at relaxation.

One characteristic of severe asthmatic attacks is the great sensation of weariness at the nape of the neck. This indicates a contraction of tissues in this locality that may be either a causative condition or an effect of the great strain to breathe; but usually the contraction is present constantly, thus serving as one of several causes, and also is aggravated by the strain. At any rate, it serves as a very evident clue to effective treatment. For if this region can be relaxed, the paroxysm usually will be

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appreciably modified in severity and duration. Cloths progressively and quite rapidly increased in temperature usually will have a very salutary effect, but they must cover the entire neck, down to the lower margins of the shoulder blades. After ten minutes or so of their application the parts may be massaged, giving further relief, especially if the tissues are manipulated deeply but slowly.

An excellent way to give the massage is to stand facing the patient, with his forehead resting on the operator's lower chest or upper abdomen. The massage movements then may be upward and downward, in line with the chief muscles of the neck, and also outward in the upper region of the back. Standing behind the patient, his head may be gently forced to one side with one hand while with the thumb of the other hand the vertebræ of the lower neck and upper dorsal region may be lightly "sprung" to the other side, one at a time. Naprapathic or osteopathic treatment likely would be concentrated to these regions, but when not available the treatment just described should be beneficial.

The hot chest and spinal compresses often

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are of much value in relaxing the nerves as well as in relieving the congestion of blood in the lung capillaries and of mucus in the bronchial tubes. Sometimes the chest compress alone will be sufficient, sometimes the spinal compress will give more relief, and sometimes both together will be necessary. A piece of heavy flannel or a Turkish towel may be used for the compress. This is wrung out of water as hot as can be borne, and placed over the whole chest or over the upper spine as far down as the lower thoracic vertebræ. A thin dry towel next the skin will allow the heat to reach the skin gradually and will help to prevent burning. The wet cloth is covered with a dry one, and both are left on until they begin to cool, when they are removed and quickly re-applied, or preferably, replaced immediately by others held ready. It is well to have two compresses with a basin or a pail of very hot water at the side of the patient, so the change can be made quickly. The applications are continued until relief is secured unless this is longer than five minutes, in which case the compress is removed, the part sponged with cool water from twenty to forty seconds,

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and then the compresses repeated immediately or after a few minutes rest. Several alternations usually will be necessary, and really are preferable. Always finish with the cool application and careful drying, unless the cold seems to produce contraction after relaxation has been secured from the heat; in this instance the cold is omitted and the part is thoroughly dried and well covered after the use of the heat alone.

Another very valuable method of applying compresses is by a combination of heat and cold. An ice-cold compress is placed on the entire back of the neck, up to and including the back of the head; at the same time very hot compresses are applied to the chest from the collar bone to the umbilicus (navel). These may extend clear about the chest, including the spine, or just the front half of the chest if the entire chest compress is especially inconvenient. The heat has a relaxing effect upon the bronchioles, while the cold to the neck and head reduces the flow of blood to the respiratory centers in the medulla, thus lessening their excitability.

In many cases the spasm of the bronchioles

will be relieved within a very few minutes by applications of ice or very cold compresses to the neck, just above the breastbone. The effect is secured through the influence of the cold upon one of the great nerves passing down to the chest through the neck. Care must be taken not to have the cold strike the chest. This localized application of cold may be made still more effective in some cases by having heat applied to the nape of the neck or to the upper spine from the lower neck vertebræ to the lower ribs.

The hot hand bath is also of much value. The hands and arms as far up as the elbows are immersed in hot water and kept there until relief is secured. The water is replenished from time to time in order to maintain the temperature, which should be about 110 degrees Fahrenheit. This bath also should be followed by the brief application of cool water to the parts, but they must be carefully dried and warmly covered to insure against chilling. A hot foot bath may be used as effectively as the hand bath, and in some cases may produce better results. The temperature at first should be 102 degrees to 105 degrees, and in two or

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three minutes increased up to 115 or 120 degrees, or slightly above, the bath to continue for from five to thirty minutes. A large pail that allows the water to reach almost to the knees gives, with hot water, a hot leg bath, even more effective than the hot foot bath. Both baths reflexly affect the nerves and circulation in the lungs.

Sometimes it is convenient to give the hot leg pack. A dry blanket is spread on the lower half of the bed, so as to reach the patient at about the navel when he reclines, extending well beyond the feet. Another woolen blanket, previously folded so as to fit over but be somewhat shorter at each end than the first blanket, is wrung from as hot water as possible, then quickly laid on the dry blanket. The patient, nude, lies on this, legs slightly separated. Each leg is wrapped separately and completely in the wet blanket, then the two legs are brought together and wrapped mummy fashion in the dry blanket. No part of the wet blanket must be exposed. Upon removal of this pack, after thirty minutes to an hour and a half, as necessary, care must be taken not to chill the parts. One leg should be unwrapped,

bathed quickly with a hot cloth, then a cold cloth, then well frictioned and dried and covered, and the other leg then similarly treated.

If the attack is not so severe as to make swallowing difficult, the plentiful drinking of plain hot water or hot unsweetened lemonade will be helpful. Taking water or lemonade so hot that it must be sipped is excellent because, in addition to the heat of the potion, it necessitates frequent swallowing, and the very act of swallowing has a powerful stimulating effect upon certain branches of one of the chief nerves controlling the lungs.

Inhalation of steam may be practiced along with the sipping of hot drinks, but care must be observed not to have the steam too hot. Let the steam mix with the air so that the temperature is moderate. A funnel placed in the mouth of a teakettle makes a good apparatus. Another excellent and simple arrangement is a tube to direct the steam under an umbrella, beneath which the patient sits. The steam-laden air is particularly helpful when the symptoms of bronchitis are marked.

If one has certain premonitory symptoms

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of an attack so that he knows when to expect it, the attack frequently may be aborted by the use of a neutral immersion bath. The entire body is covered in the bath except the head, the temperature of the water used being about 98 degrees. The bath should be continued for from thirty minutes to an hour. Whether or not one anticipates an attack, this bath may be used occasionally to advantage. It is best taken just before retiring, when not used to prevent a forewarned attack. It is a great aid to relaxation and also helps to equalize the circulation throughout the body.

Further benefit often may be secured by following the bath with a cold abdominal pack, which is allowed to remain in place all night or until from any cause it becomes uncomfortable. This pack is especially helpful after the bath that is used to prevent an attack. It is composed of a linen or muslin cloth wrung out of cold water, wrapped completely around the abdomen, and snugly covered with a heavy woolen cloth, such as part of a blanket. If this can be covered with some waterproof wrapping, such as mackintosh or oiled silk, so much the better. The pack should be applied

quickly, and if it does not soon become warm hot water bottles may be placed at the sides until such reaction is secured. The pack dilates the abdominal blood vessels so that more blood is drawn to that region, thus relieving congestion in the chest. It also has a relaxing effect on the nerves, and tends to prevent the return of spasms in the diaphragm.

If there is any tendency to constipation, kidney trouble, or flatulence, a hot enema will be found very helpful. Even if these conditions are not present it frequently will be worth while to try the enema, as it has a tonic effect upon the sympathetic nervous system, which has control of all the involuntary functions of the body.

Inasmuch as the enema, to be effective, requires one of several more or less reclining postures, a very effective substitute that is easier to take is the rectal irrigation. This is taken while seated on the toilet seat, the water from the fountain syringe bag being allowed to escape from the rectum as it enters, which it will do if the long curved vaginal douche tip of the syringe outfit is used, inserted full length into the rectum. From one to three

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bagfuls of fairly hot water may be used; but if the bag is suspended not more than two feet above the hips the water will escape from it more slowly and, therefore, less water will be necessary to secure the same duration of the irrigation. This may continue for from five to fifteen minutes, according to the general condition and its effect. At the completion of the hot irrigation a few ounces (six to ten) of cold water should be used, care being taken not to use such extreme temperature as to bring about a return of spasms. This, however, is unlikely with the small amount of water suggested.

In a few of the milder cases or cases which are just beginning, and where the vitality is fairly good, it may be found that a heating compress to the chest may give more relief than the hot compresses previously suggested. It has much the same effect in many ways, as it soon becomes warm after it is applied; but it is better for toning up the nervous system. This pack consists of a muslin or linen cloth wrung out of cold water, wrapped completely around the thorax, and snugly covered with a dry woolen cloth. Simply wrapping the pack

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around the chest under the armpits generally is sufficient, but if more is required it may be crossed over the shoulders or cut in jacket form. It may remain on for from one to two hours.

If there is any reason to suspect that the attack has been brought on by overeating or indigestion of the preceding meal, the stomach should be promptly emptied at the first signs of the dyspnea. This can be done by drinking several glasses of warm water and then placing the finger in the throat, or by giving an emetic of a teaspoonful of salt or powdered mustard in a glass of barely warm water. But if the attack comes on an hour or more after a large or indigestible meal, the stomach may be emptied or relieved by sipping two or more glasses of very hot water.

If violent emotion has been an exciting cause one must immediately secure physical relaxation, calm the mind, and turn the thoughts to other things. The monopoly of the attention by the symptoms often will be sufficient to distract the mind from the cause of the emotion, but relaxation very likely will require considerable conscious effort.

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If there is any known easily removable source of nerve irritation to which one is susceptible, such as the odor of a plant or animal, scratching of the skin from heavy, rough clothing, etc., this should be promptly taken away.

If there is nasal irritation from excess mucus or the presence of irritating substances, cleansing the nose with warm salt water will be of some assistance.

Spinal treatments often are very helpful. The hot spinal compress has been mentioned. Massage, osteopathic or naprapathic manipulation, or even chiropractic adjustments will be of considerable assistance in producing, either directly or reflexly, the relaxation that is so much needed. These are of particular value where there is an actual lesion of the muscles or ligaments or subluxation of the spinal bones which are acting as an exciting cause of the attacks. Practically all chronic cases have especially these muscular and ligamentous lesions as a result of the tension, violent efforts to breathe, and changes in the rib positions, even if such lesions (resulting from falls, strains, jars and other injuries before the on-

set of the asthma) are not actually a prominent or principal cause of the asthma. Osteopathic and naprapathic manipulation and massage are the easiest to apply during an acute attack, as they can be given in the sitting position if necessary, though perhaps not so satisfactorily nor easily as in the recumbent posture.

If these treatments cannot be conveniently secured, one can give himself a sort of treatment if the attack is not too severe. Twisting and stretching the spine can be done by moving the arms, shoulders, and head in all directions. These movements should be done slowly, and each carried to the extreme limit of motion of the part. Pull one shoulder far forward, then relax, and do the same with the other; raise one shoulder as high as possible, relax, and repeat with the other; pull the shoulders backward; rotate the head alternately left and right; bend the head forward and backward; pull the head forward with the hands clasped behind the head, at the same time elevating the shoulders, etc.

These all can be done in combination with the hot spinal compresses. If one has assist-

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ance his helper can place one knee against the spine over the pack and then carefully pull backward on the shoulders with the hands. The pull should be exerted and released gradually. The shoulders may be partially rotated while held backward. An exercise that often is helpful consists in striking vigorously forward with the arms, alternating the two with a short pause between. The shoulder of the striking arm should be rotated well to the front when striking. This helps to push the air out of the lungs. All these measures are of additional value in that they help distract the patient's mind from his symptoms and thus aid in securing the relaxation.

A very important point that all should remember is the need for fresh air. Many people have what might well be called aerophobia—fear of air, especially night air, as if there were any other kind available after sunset! Of course, everyone should sleep with the windows open, or outdoors if possible; but if an attack should come on at any time when the surrounding air is in any way confined or vitiated the first thing to do is to get fresh air if it is humanly possible to do so. It will

help to maintain more nearly normal oxygenation of the blood, in spite of the restricted breathing, so that discomfort will be less, relaxation easier, and the attack shorter.

When one has had an acute attack it is best immediately to adopt a fast or fruit diet for a few days as described in the next chapter, in order to prevent or at least abate a probably early recurrence.

Some may find that one of these measures that have been mentioned will give more relief than another, some may require the use of several; and it may require a little experimentation to find out just which one (or ones) is best suited to the particular case. However, it is very seldom, indeed, that relief may not be secured without recourse to drugs. In fact the only cases where such relief is not secured are those of very long standing who have used drugs habitually. They may have to discard the drugs gradually while using other measures; but they should do their very best to get along without the medicine at the earliest possible date, because as long as they use it they are retarding their real cure.

But if you are one of the very impatient

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ones, or if you have an asthmatic member of the family who clings to the idea that some form of medication is necessary in acute disorders or acute paroxysms of a chronic disorder, there are a few simple medicines that will be palliative and yet will not greatly hinder the final real cure by proper treatment between attacks. I do not recommend the use of these measures, not because of their injury so much as because they are unnecessary; they have absolutely no tendency to correct the underlying condition; and almost invariably an internal medicine that has so pronounced an effect upon the nerves or any other part of the body as to check or shorten paroxysms so severe as those of asthma will retard to some degree the work of natural measures in correcting the causes of the trouble.

Very strong black coffee is one of these relieving drugs. It should be taken very hot, because of the required sipping. When taken on an empty stomach it has a more pronounced effect, also in cases where it is not habitually used as a beverage. Where there is some degree of bronchitis the coffee is helpful in increasing the expectoration, thus aiding in

clearing the bronchioles of their secretions.

When pearls of amyl nitrite are available one of these may be broken in a handkerchief and its fumes inhaled at the onset of an attack, often with prevention of full development of the attack. However, after a paroxysm has fully developed this treatment usually is ineffective for giving relief or modifying the attack.

No case of asthma ever was cured by palliative measures. The underlying causes must be treated successfully before the disease asthma, with its acute paroxysms, is corrected. Particular attention must be accorded the practice of relaxation. Give natural methods a fair trial during the spasms and soon you will win freedom from the bondage of drugs.

Because the entire body frequently must undergo considerable change before the asthmatic attacks cease to develop, requiring an appreciable length of time, it may be necessary to pay particular attention to avoid conditions that tend to excite the attacks. Care should be observed to discover exciting causes, and these should be carefully guarded against. One may have to shun environments possessing

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certain odors that incite attacks. The special odors about gas-works districts have a particularly sedative effect, however, probably because the air is laden with ammonia, creosote, carbolic acid, and other by-products resulting from wood distillation. This is similar to the medical inhalation of vapor of turpentine or of steam from water containing a small per cent of carbolic acid.

In cases of bronchial asthma it is highly advisable to keep the skin uniformly protected from exposure, as some regions of the body are particularly susceptible to irritation, from which asthmatic attacks may arise. Attacks in some cases quickly follow a cold or a suggestion of a cold in the head, in which cases the susceptible region generally is the nape of the neck. If one has either an active or arrested tuberculous condition, the chest is the most vulnerable part and must be protected. Night sweats should be guarded against, as these frequently lead to the local skin temperature that starts an asthmatic paroxysm. Where the asthma starts from troubles in the pharyngeal or tonsillar regions, special care must be observed to protect the feet from cold

and dampness. Rubbing of the feet each morning with oil will help prevent colds arising from exposure of the feet.

When abnormal conditions of the digestive tract give rise to asthma—peptic asthma—one must particularly avoid large meals and indigestible foods. It should be remembered that the digestive powers are greater in the early part of the day than toward the latter end. Each individual will have or should have learned by painful experience what foods, combinations and quantities disagree, and he should shun these in the future. However, the dietetic treatment of any form or degree of asthma is the chief part of the treatment, and this is taken up in the following chapter, together with all other health-restoring factors.

CHAPTER VI

General Treatment

THE reader will recall that I advised in the last chapter that the most attention be given to the measures listed here under general treatment. While the various treatments given in the last chapter have considerable curative value, they do not have as much effect in removing the fundamental causes as do the measures to be here discussed. *Effects* of causes also must be removed, and part of the treatment will be directed toward that end; but this does not minimize the importance of removing the causes themselves. In the milder cases the mere removal of the causes is frequently sufficient to enable the body to remove the effects of those causes without special assistance.

The chief ends to be accomplished in the treatment of asthma are the prevention of any further accumulation of toxins, the removal of those already accumulated, and the removal of

all sources of nerve irritation. In accomplishing these tasks it is necessary to use and properly adapt such measures as special diets, breathing, bathing, exercise, sleep and relaxation, suggestion and right thinking, and sometimes spinal treatments and electricity. When complications are present various modifications of treatment may be necessary; and if reflex causes are present some further measures may be required for the best results. I shall consider these various items in the order named.

Fasting is the blood and tissue purifying measure par excellence. No other treatment gives quite the results in this respect as does fasting. It also gives the digestive organs a rest; it renders all symptoms less acute; and it promotes relaxation. The factor of first importance, therefore, in the treatment of asthma is the fast. No food except water is taken for from three to fifteen days, depending upon the weight, strength, confidence, and condition of the patient. If overweight, a full length or "finish" fast is taken; if underweight to any great extent, the fast may have to be limited to from three to five or seven days. If the strength does not hold up well on the fast, the

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fast should be shortened accordingly. If the patient is apprehensive of the fast, it may be necessary to start with one day and repeat a number of times, gradually increasing the number of fasting days. If the symptoms are very severe or the case very chronic, the longer fast is to be taken if at all possible.

When necessary to take short fasts they should be repeated as soon as weight and energy are regained, making an effort to fast longer at each succeeding fast. It may be necessary to take a number of fasts in order to obtain complete results, and none of the fasts may be over a few days' duration. While fasting, from two to four quarts of water a day should be drunk. An enema should be taken daily for the first seven days, then every other day, although if there seems to be considerable accumulation in the intestines the daily enema may be continued for the duration of the fast. The high enema is particularly commendable. This is an enema taken by a special colon tube which is inserted (gently) into the bowel to the extent of twelve to eighteen or more inches, and then from two to four quarts of moderately warm water allowed to

slowly enter the colon. The knee-chest position is best for the start of this enema, or the position of lying on the left side; then the position on the back is taken, preferably with the hips slightly elevated. The water is to be retained for three or four minutes, and after expulsion an ordinary low enema of a few ounces of cool water should be given and immediately expelled.

Except for walking there should be an abundance of rest; and plenty of fresh air and sleep are essential. Dry friction, sun, air, and cool water baths are to be used, or as many of these as are available.

If the patient is very nervous, much underweight, or has a well-marked excess of uric acid, the acid fruit diet often will be preferable to the absolute fast. This is nearly the same as a fast, the only difference being that from four to eight oranges are taken daily in addition to the water. The fruit has an alkalinizing effect on the body, fluids and tissues, and is somewhat stimulating. Most people can continue longer on fruit than on the complete fast and frequently with less depression. When the weight and strength will permit only a short fast yet

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the symptoms require a long one, the fruit diet can follow the fast to great advantage. In fact, in all cases, it is customary to take fruit juice alone for at least one day before the absolute fast begins and for one day at the termination of the fast. This period may be lengthened if necessary, and, in fact, the number of days devoted to fruit juice after the fast may be several to advantage. Some patients have found that they could again return to the complete fast after a few days of orange juice. If this is done, then the fruit juice again should be used, for at least one day, after the fast. In breaking a fast of longer than seven days, fruit should be always used for two days, the first day taking the juice only and the second day adding the pulp if desired. If it is desired to continue fruit juice longer there is no objection to doing so. Breaking the fast or fruit diet in the proper manner is extremely important.

Resumption of food always must be gradual. If the milk diet is to be used, six glasses are taken on the first day following the days of fruit, after a total fast of from three to seven days (including the days on fruit). In this

case, the quantity is increased a pint a day up to full quantity—from four and one-half to six quarts daily. In this case the quantity is increased one glass per day for three days, then a pint per day to full quantity. In no case is a greater quantity taken than can be handled with comfort. In most cases it is best to break the fast (including the semifast of fruit) on milk, using it for five to seven days, even when solid food is to be regularly employed as a diet.

However, the milk may be omitted entirely if for any reason it is found necessary to do so. In this case, a bowl of vegetable broth may be taken three times during the first day after the absolute fast, the fast not to be followed by fruit juice; on the second day, broth and toast three times; on the third day, broth, toast, and one raw vegetable make up the three meals. Other articles are added gradually thereafter. The longer the fast the more gradually must other foods be added.

The milk and fruit diet is the best to use after the fast or fruit diet. It is easily digested, does not overwork the stomach or intestines, has a strongly alkalinizing effect, furnishes all the elements needed by the body,

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and is stimulating to the eliminative functions. It is a simple diet, can be procured almost anywhere, can be nicely regulated as to quantity, and the combination is ideal. This diet may be taken in one of two ways. The first method is gradually to increase the quantity of milk after the fast, until four quarts a day are being taken. This is consumed a glass at a time at regular intervals throughout the day. Two oranges a day, one in the morning and one at night, are used until the full quantity of milk is reached, then some sweet fruit may be added, such as two dates with each glass or each second glass of milk; or a similar quantity of raisins, figs, or prunes may be used. In a day or two more other acid fruits are added, using as much as desired. The quantity of sweet fruit also may be increased somewhat if there is a strong desire for it, but overeating must be carefully avoided. There will be a tendency to eat more sweet than acid fruit, but this must be avoided. In cases where the system is particularly lacking in alkalinity, only acid fruit is used with the milk.

The second method of taking this diet is similar to the above in regard to articles used;

but after the full quantity of milk is reached it is taken in larger quantities at less frequent intervals. First, a pint of milk at a time is taken with fruit, and finally a quart at a time, by working up slowly, say within three or four days. Both sweet and acid fruit may be used with each quart; or, if it seems to agree better, sweet fruit may be used with one quart and acid fruit with the next, alternating the two. This method is more convenient for those who have to work while taking the treatment, and good results usually may be secured from it. It is better to use the first method if possible, however, particularly for the first few weeks, as it is less apt to disturb the digestive organs, and it favors more regular bowel activity.

The bowels may not move of themselves for a few days after starting the milk and fruit, and an enema may be taken daily during this period. The quantity of water and the temperature are gradually reduced. If the bowels show little tendency to move of themselves the enema may be skipped for a day or two, but not usually longer. In most cases normal movements will appear in a week or less. It is

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much better to try to secure natural actions than to rely upon the enema—by changing the temperature of the milk, taking more fresh fruit, and having a regular hour each day, for training the bowels.

All other treatments advised may be used while on milk and fruit; but it is better to take exercise in the morning before starting the milk, except for walking, which may be used at any time during the day.

The milk and fruit diet is continued until the desired results are secured, after which a normal diet usually will be satisfactorily digested. Additional fasts or fruit diets may be taken occasionally if they seem necessary, each to be followed by the milk and fruit diet. When ready to adopt a solid food diet it usually is the best plan to take milk and fruit for the first half of the day, then a well balanced meal of wholesome vital foods in the evening. Continue this for from three days to a week, then all the regular meals may be taken, or if preferred, milk and fruit may then be taken for breakfast and two balanced meals, at noon and in the evening. However, the combination plan of milk for half the day and

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an evening meal may be continued indefinitely, for as long as desired.

Another admirable diet is the sweet fruit and sour milk diet. Buttermilk, whipped clabbered milk or any available cultured milk may be used, and any preferred sweet fruit, but especially dates. One may take the fruit with each glass of milk, say three or four dates, at every hour or less (but at regular intervals). Or a glass of the milk may be taken every thirty or forty-five minutes, and four times daily, at regular intervals, along with four to eight dates. Still another satisfactory plan is one quart of milk three times a day with twelve to eighteen dates; or, if one is of large stature or doing heavy physical activity in work or sports, there may be four of such meals.

In the exceptional case where it is difficult to secure a good grade of milk or sufficient fruit, or where the milk and fruit diet does not agree, or in some cases where the patient is much overweight and the diet cannot be sufficiently controlled, or where one's occupation would preclude the milk diet, it may be necessary to use solid foods as a diet immediately

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after the fast and orange juice. Fresh fruit and green vegetables are the chief items to be used, with moderate quantities of other fruits and vegetables, whole grain cereals, buttermilk or sour milk, cottage cheese, butter, eggs, and honey for sweetening. Dried fruits may be used if fresh ones are difficult to obtain, and preferably should be soaked in water for several hours, not stewed, or if stewed, not sweetened. It is impossible to give any stated quantities to be used, as this will vary with the individual. Where reduction of weight is necessary the quantity may be limited to an amount just sufficient to hold the weight stationary, reduction being accomplished by repeated fasts or fruit diets; or the quantity may be so adjusted that the weight will be reduced a pound or so a week, with an occasional fast or semifast if the vitality is good. In no case should one eat to repletion or eat without appetite. It is better to run the risk of undereating than to overeat, but very few may have need to fear the former.

When it is preferred to adopt a diet of solid foods, the amounts of each food selected should be very small, and only two or three articles

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should be combined. Gradually the quantity of each food may be increased, but only after several weeks should the variety be increased; and always one should avoid more than four or five varieties of foods at any one meal. All foods should be natural foods, non-devitalized by modern milling, bleaching, preserving, smoking, pickling, or other preservative methods. Rich foods, gravies, spices, condiments, pastries, candies, tea and coffee should be avoided. The foods to include in the diet are fruits of all classes, green and tuberous vegetables, whole grain cereals, nuts, cottage (pot) cheese, milk and dairy products, and eggs and meat rather sparingly. Salt should be used only in very small amounts if at all and will not be necessary except in such amounts if an abundance of uncooked foods are used.

From the very start of treatment it is of the greatest importance that one get as much fresh air as possible, both day and night. Sleep outdoors and live outdoors, if arrangements for so doing can be made. In no case should one sleep in a room that is not thoroughly ventilated. If necessary to be indoors in the day-

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time, try to have as much ventilation as possible. If the weather is very cold it is better to spend a little more money for coal than to do without ventilation. Health is of more importance than money. But on cold windy days muslin window ventilation may be used to good advantage. These are frames six to twelve inches high holding open-mesh muslin (or similar cloth), fitted into the window frame after raising the lower sash sufficiently. Another device to permit of fresh air without strong horizontal winds is a suitable board resting in a frame on the window sill and sloping inward and upward, to deflect upward the air from the partly opened window.

Having made arrangements for the fresh air, be sure that you get it into the lungs. Practice deep breathing for a few minutes whenever convenient during the day, so that you gradually will form the habit of doing it unconsciously. Go outside and do this if you are otherwise confined indoors by occupation or any other reason. If the air is very cold, breathe slowly, or do the breathing in a well-ventilated room where the air is somewhat warmer. Cold air seldom causes any difficulty,

however, unless the temperature is below zero, and even then not if one uses good judgment.

In taking deep breathing exercises the lungs should be comfortably filled, but straining must be avoided. There is in most cases already some distention of the air vesicles, and if one attempts to "pack" the air into the lungs this distention will be aggravated. Holding the breath also should be avoided. Simply breathe in to comfortable capacity and then breathe out again, endeavoring to maintain a normal rhythm and avoiding tension. Various movements of the body may be combined with the breathing, if desired. They help to avoid monotony, and mechanically assist in the movements of the ribs. Simple movements are the best in most cases. The following are suitable breathing exercises:

1. Raise arms forward and upward overhead as you inhale, lower again as you exhale. Same, raising arms sideward, upward.

2. Extend arms forward, shoulder high. Pull back, bending the elbows but keeping them at shoulder height, as you inhale; push forward, straightening the arms, as you exhale.

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3. Cross arms in front of chest. Spread arms backward as you inhale; bring forward and cross again as you exhale, crossing the arms alternately over each other as the movement is continued.

4. Drop the head forward and clasp hands behind the head. Bring head and elbows backward as you inhale, more or less resisting the head movement with the arms; allow head and arms to relax forward again as you exhale.

5. With hands on hips, inhale a full breath slowly, then purse the lips and blow out. In the milder cases the breath may be expelled in a series of blows, holding it momentarily between each puff. This develops control of expiration. Alternate or follow with the same movement in every way except that the breath is inhaled while the lips are pursed.

6. With hands on hips, inhale a full breath, then open the mouth wide and expel all the breath suddenly. Use only slight force at first, gradually increasing the speed and force with which the breath is expelled.

7. With arms at the sides, inhale a full breath slowly, then relax all the muscles of the thorax, allowing the breath to come out as it

will. This is best done in a sitting position. Think of collapsing like a pricked balloon, which will help you thoroughly to relax during exhalation.

Movements of a similar character may be "invented" and used to advantage by the patient. Any movements which aid in producing relaxation during exhalation, which develop the accessory muscles used in exhalation, or which mechanically help to force the air out of the lungs will be of assistance, as they will give one better control of the breathing during an acute attack, besides having the general advantages of all deep breathing.

What breathing is to the lungs, bathing is to the skin. And I refer here not only to water bathing but to air baths, dry friction baths, sun baths, steam baths, etc. Deep breathing stimulates lung activity and increases elimination. The skin normally is a very active eliminating organ; so much so that when properly functioning it will as rapidly purify the body as any other depurating organ. As elimination is one of the keynotes of the treatment of asthma, the importance of bathing can be readily understood. Practically all forms of

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baths, as well as many other hydropathic measures, are of value in the treatment of this disease.

I already have mentioned the value of the neutral bath in the treatment of the acute attacks. The full hot tub bath (temperature 105 to 110 degrees) may be used between attacks in order to promote perspiration and the removal of a fair amount of morbid matter from the body. A cold towel may be wrapped around the head during this bath, if there is tendency to headache or giddiness. The bath should continue for ten to fifteen minutes, and a quick cold sponge should be taken afterward. Twice a week generally is sufficient to take this treatment. The steam or hot air cabinet bath may be used as a substitute for the tub bath. Either one promotes a still more copious perspiration. The electric cabinet bath may be taken in the same way for the same purpose, and is superior to the other cabinet baths in many respects, inducing even still more perspiration, and being better ventilated and less enervating; but the conveniences for taking it are not always available. If the diet, bowels, and bathing in other respects are as they

should be, the "sweat baths" should be unnecessary. In any case they should not be taken more often than once a week, and much more preferably with the head out of the bath and in the fresh air. There is always the likelihood that inadvertent exposure after the bath will bring on an attack in the asthmatic with sensitive skin.

The sun bath is superior to any of the baths above named, as it not only promotes a free perspiration but is germicidal and healing in action, stimulating to metabolism, and energizing to the whole body. The sun bath is one of the most important to use in a case of asthma, and the patient should take one at every opportunity. For good results the bath should be taken under the open sky and not through glass. This limits the period of the year when they may be taken, except in the tropical and semi-tropical zone; but if a sheltered place is selected, one will be surprised to see how early and how late in the season sun baths may be used. By lowering the top sash of a window on the sunny side of the house an excellent sun bath can be secured indoors, even during rather cool weather. The

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warmth of the sun and of the house and the height above the patient of the window usually will prevent the patient from chilling. However, those with sensitive skin must be careful to avoid cold or chilling drafts of air if they would avoid attacks. One who has hardened himself can take sun baths in the winter time for short periods if one keeps active. In taking the sun bath, one starts with only a few minutes' exposure, and then increases about five minutes a day. Frequently, it is advisable first to expose from the knees down, next day the entire lower extremities, next to include the abdomen, then the entire body. After the skin is well tanned there is hardly any limit to the length of time that may be spent in the sun, unless the weather is very hot. In this case, the bath should be taken in the morning or afternoon when the sun's rays are more slanting, and not for over two hours at a time after the graduated "hardening" process. During the bath the body should be sprayed or sponged off occasionally with cold water; and a cold shower or sponge always should be taken at the conclusion of the bath. Some cases may find it necessary to cover or other-

wise shade the head, or to tie a cold wet towel around it during the sun bath.

The baths so far described are of value chiefly for their eliminative effect. While air and dry friction baths and cold baths also stimulate elimination to some extent, they are used more for their tonic effects. Air and dry friction baths are particularly valuable in soothing the nerves and promoting relaxation. In taking an air bath, all that is necessary is to take off the clothes in one's room, which, of course, must be thoroughly ventilated. The precautions that have been given for those susceptible to cold upon the skin should be borne in mind, and air baths in very cold weather avoided or taken for a very few minutes only. The dry friction bath may be taken with the hands, a rough towel or a flesh brush, starting with mild rubbing and making it more vigorous from day to day as the skin becomes inured to it. These baths may be followed with a cold bath; either the friction or cold bath may be taken alone. The sponge or spray is best in most cases, the plunge being a little too strenuous, at least until the asthmatic condition is considerably

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improved, and unless the vitality is high and the circulation reaction vigorous. If not accustomed to cold water, one can start with a mild temperature, say about 80 degrees or higher, and then gradually reduce it from day to day. If reaction is poor, the cold bath may be preceded by a warm bath of some kind, and the cold then being applied first to the legs, then the arms, then the trunk. An excellent way to take the cold bath is first to stand in three or four inches of fairly warm water then friction the body all over with the cold wet hands. Reaction (return to warmth with more or less redness of the skin) must always be secured following a cold bath, if one is to receive benefit from the treatment. By following the suggestions given there should be no difficulty experienced in this; but if there should be, vigorous friction or light exercise will soon create warmth, and in the future care must be observed to insure better reaction.

The local baths, compresses, and packs which are of value have been described in the preceding chapter. The cold chest pack may be used to advantage between attacks and the hot spinal compress often is very helpful when

combined with exercise. Otherwise, the general baths are the most important baths to use between attacks.

We now come to a consideration of exercise. Owing to the difficulty in breathing, which frequently is experienced even between the acute paroxysms, some may doubt the advisability of taking exercise; but if taken in the right way it will be productive of nothing but benefit. Complications may contraindicate exercise for a time, but these special cases will be considered later.

Of all the various forms of exercise, walking is one of the best for asthma. It is not strenuous, can be nicely graduated, and yet gives all the physiologic benefits of more vigorous activities. Combined with deep breathing, it should be used regularly, starting with an amount that is easy to perform and increasing gradually both the distance and speed. When walking briskly, particularly over hills, and swinging the arms, considerable exercise may be secured. Another benefit of walking is that one can use it until quite fatigued and still recuperate quickly and easily. Even very severe cases can use walking to advantage. The

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milder cases can use it both in preparation for other exercises and in combination with them.

The other exercises used include both general and special movements. The general movements tone up the entire body, and stimulate circulation, metabolism, and elimination; the special movements do these things particularly in the region of the lungs, also stimulate the respiratory nerves, and help to correct any spinal lesions.

General movements comprise any of the free-hand or floor calisthenics. Among these are:

1. Move the head in all directions.
2. Shrug the shoulders; singly, alternately and together. Draw them forward, and pull them backward. Circle them forward and backward (forward, upward, backward and downward, and reverse).
3. Cross arms in front of chest; and over head. Swing arms in circles forward; backward; inward; and outward. Flex and extend the arms forward; sideward; and upward. Rotate arms (twist in shoulder sockets), with arms hanging downward; out sideward; forward; and overhead.

4. Bend the body in all directions (but carefully backward).

5. Alternately raise the knees to the chest.

6. Raise and lower legs forward; sideward; and backward. Flex legs alternately—raise feet backward and upward, keeping the thighs vertical, in a standing position.

7. Bend the knees half way, keeping the heels on the floor. Do the full knee bend (squat).

When all these can be done eight or ten times each without especial fatigue, any of the following may be added:

8. In stride standing position with arms extended overhead, swing arms down between the legs, then up and out to the sides. Exhale when bending forward, inhale when coming to the starting position.

9. In stride standing position, bend the body to the right and raise the left arm, inhaling when bending; come to the erect, arms down, exhaling. Same other side; continue several times to each side.

10. In stride standing position with arms extended sideward shoulder high, rotate and bend the body forward so as to touch the right

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hand to the left foot, exhaling while bending; return to starting position, inhaling. Same to other side.

11. In stride standing position, bend the left knee and reach out with the left arm, touching the hand to the floor at a point as far as possible to the side, inhaling while extending the arm; return to standing position, exhaling. Same to the right.

12. Stride forward with the left leg and flex the arms at the side, elbows at shoulder height. From this starting position, bend forward and touch the floor exhaling, then rise to erect position again, flexing the arms and inhaling. Come up vigorously as though pulling something. Repeat with the right leg forward, and continue alternating right and left.

13. From standing position, do the deep knee bend and place the hands on the floor between the knees, taking a deep breath; then extend the left leg forward, bring it back, and return to standing position, exhaling. Same with the right leg, after squatting. Same with legs extended alternately to the sides and to the rear; then extend both legs to the rear resting on hands and toes, then resume the

squat, and return to standing position. Repeat.

14. Flex and extend the legs upward alternately and together.

15. In reclining face-up position, raise and lower the legs alternately, and together.

16. In reclining face-up position, with arms extended overhead, arise to sitting position and touch toes, lower and repeat.

17. In reclining position, with knees drawn up until heels rest on floor close to hips, raise and lower the hips.

18. In side-leaning rest position (body supported on the straight lower arm and the side of the lower foot) raise and lower the hips. Same on the other side.

19. In reclining face-down position, raise and lower the legs alternately, and together.

20. In reclining face-down position with hands clasped behind the back, raise and lower head and shoulders.

21. In reclining face-down position with the hands under the shoulders, push the body up to arm's length.

The special movements which should be given particular attention are:

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1. Flex the arms at the sides, elbows at shoulder height and well back; then reach forward with the left arm, and backward with the right, rotating the trunk far to the right. Perform the movement slowly at first and stretch out as far as possible in both directions. Return to first position and repeat, reversing the direction of the arms. The movement may be made gradually more rapid, if well marked effect is desired, the arms being flung vigorously forward and backward.

2. Flex the arms at the sides, with the elbows against the body. Raise the elbows side-upward as high as possible, then bring them down to the sides again and grip the body with them as tightly as possible. Inhale while raising the elbows, exhale while lowering them. Relax and repeat.

3. Flex the arms sideward, shoulder high; then circle the elbows forward and backward, breathing rhythmically.

4. Clasp the hands behind the hips; push them as far upward as possible while bending the head forward, exhaling; then extend the arms downward as far as possible while bending the head backward, inhaling. Do the

movements slowly and to the limit of motion, but not to the greatest limit of deep breaths.

5. In reclining face-up position with some light weights in the hands held on the floor beyond the head, raise the arms upward to vertical and return to the floor. Exhale as the arms are brought to vertical, inhale as they lower to the floor.

6. In reclining position, face-up, with arms extended outward at right angles to the body and with weights in the hands, cross the arms over the chest, exhaling; extend them outward to the floor inhaling.

7. In reclining face-up position with arms at sides and with weights in the hands, raise head and shoulders and stretch forward with the arms as far as possible, exhaling; lower to floor, inhaling. Relax, and repeat.

8. In reclining face-down position with weights in the hands, the arms extended over head, raise the arms as far as possible, inhaling; exhale while lowering the chest to the floor. Relax and repeat.

9. From reclining face-down position with the arms extended to the sides, raise the arms

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as high as possible, inhaling; lower the arms, exhaling. Relax, and repeat.

10. From same position as Number 9, raise one arm as far as possible, somewhat twisting the body, inhaling; lower the arms, exhaling. Repeat with the other arm, and continue reversing the movement.

11. From the position on "all fours", (hands and feet) lower the body by bending the arms, allowing the body to move forward at the same time. Just before reaching the floor push the body upward again to arm's length. The body should have a smooth downward, forward, upward and backward movement. This exercise is rather strenuous and may have to be omitted for a time until the strength has increased considerably. Any of the special exercises given in the chapter on treatment of acute attacks also may be used between attacks.

As a rule, walking is the best exercise for most cases to begin with. After about a week the special movements are added, either a few at a time or all at each exercise period, according to strength. As soon as these can be done easily and there has been a definite improvement in the general condition and

strength, the general exercises are added. The time when these can be begun will vary in different cases. Always begin with a moderate amount and increase gradually. Never exercise to the point where the muscles tremble or where recuperation is incomplete, after a normal night's sleep. Rest from exercise except for walking, should be observed one day a week, or perhaps two days each week at the start (for the first month or less) of treatment.

The question of rest is fully as important as that of exercise. The two go together; each one helps the other and each depends on the other for best results. Properly balanced, they will perform wonders. When ill, it is always well to secure at least nine hours and never less than eight hours of sleep each day. If an additional nap in the afternoon can be taken, so much the better. The body does most of its repair work during sleep and the more you can secure of it, within reason, the quicker will you recover—unless you are very much above normal in weight. In this case eight hours of sleep should be a maximum for you, unless, of course, there is a well marked element of nervous exhaustion.

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When sleeping, the two main points to be kept in mind are fresh air and relaxation. Sleep outdoors if you can, but if you cannot, be sure that you have plenty of ventilation in the bedroom. After retiring mentally "go over" the entire body to see that every muscle is relaxed. Do this several times, if necessary. The position assumed should be the one that is most comfortable, so long as the chest is not cramped, in order that you can relax better. After the body is relaxed, relax the mind by refusing to give attention to any thought which enters. When thoroughly relaxed in mind and body, sleep soon will result. This is the best way to promote sleep where insomnia is present. If one finds it difficult to relax, the use of the neutral bath, the hot foot bath, the dry friction bath, or breathing exercises, all of which have been described, will be of assistance. As the various sources of nerve irritation are removed by right living, however, one will find it increasingly easy to relax; and, of course, practice is a great help, also. If one finds it difficult to sleep in the afternoon, a period of complete relaxation will be practically as good. When you have acquired the

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ability to relax at will, you will have much better control over any acute paroxysms, if indeed any will occur. The importance of the practice of relaxation in cases of asthma scarcely can be overestimated.

The measures so far discussed have been physical measures. I wish to call your attention also to the importance of the mental attitude and right thinking. One should be hopeful and confident at all times. Trust the life force within you to do its work well when you have stopped interfering with it by discontinuing your bad habits of living. This life force built your body well in the first place, and it can do it again when given the chance. So there is no reason to be anything but hopeful. Worry, depression, fretfulness, impatience, etc., only interfere with the healing powers of the body and mind.

It is important that the asthmatic should keep a watch over his thoughts. The neurotic tendency, which inclines one to worry and to make mountains out of molehills, and the uric acid excess, which inclines one to be irritable and short of temper, continually will be interfering with progress unless one guards the

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thoughts and makes a persistent effort to be calm and cheerful. Suggestion will be of value here. Continually suggest to yourself that you are calm, poised, cheerful, confident, and improving right along. You cannot repeat these thoughts long without making some impression on the mind, and hence on the body, for the mind controls the body. Destructive, depressing thoughts poison the body just the same as does wrong diet; constructive, happy thoughts purify and strengthen the body the same as does proper diet. If you will work on your disorder; and on your body as a whole, from both the mental and physical standpoints, you will find that each will help the other and more rapid progress will be made.

In practically all cases of asthma some spinal lesions will be found. These may not be of great importance, and hot spinal compresses and exercise may be sufficient to remove them. Spinal treatments, however, are always helpful, even though not absolutely necessary; and if they can be conveniently secured it will be worth while to take them. In cases where accident has been partly or wholly responsible for such lesions, special treatments

are really necessary. If these cannot be secured, it is seldom that considerable benefit may not be obtained by stretching exercises. Apply a hot compress to the spine for five or ten minutes, then rather slowly bend and twist the body in all directions and combinations of directions, carrying each movement to the fullest extent possible. Any movements which give rise to considerable pain, however, should be avoided. It is very unlikely that there will be many of these. Hanging from a bar with both hands, or suspending the body with straps under the chin and back of the head also will be found helpful. The latter must be used cautiously, and is best done by means of rope and pulley, so that the stretching may be gradually done by pulling the opposite end of the rope with the hands. It is not necessary to suspend the entire weight on the neck, and rarely is it advisable, especially without careful supervision.

Electricity may be used in a number of ways in the treatment of asthma. The forms of the most importance are the mercury vapor lamp and the electric cabinet bath. Neither of these measures applies electricity directly,

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yet each is of more value in this disease than any directly applied current. The lamp is used to provide artificial sunlight, as a substitute for the sun bath when the latter cannot be obtained, or it may be used for short periods in combination with regular sun baths when the sun is obscured for a day or more. The lamp rays usually are applied to both the front and back of the body for periods starting with about three minutes and increasing two minutes a day up to forty minutes. This lamp is an expensive apparatus, however, and rarely is available for home treatment.

The value of the electric cabinet bath already has been explained. It may be used one to three times a week, but it is not necessary if regular sun baths can be obtained. The value of this cabinet bath lies not so much in the perspiration induced by the heat as in the radiation of light, though there is benefit from both sources. The high-frequency current may be used for general tonic effect, but "violet ray" outfits for home use are of little or no real value. It will be seen that electricity is used mostly as a substitute for other measures or when a particularly intensive effect is desired,

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and except for the artificial sun bath is not of particular value.

SPECIAL DIRECTIONS FOR COMPLICATED ASTHMA

Emphysema. The most common complication of asthma, as already has been mentioned, is emphysema. The treatment already outlined varies but little, however, when this complication is present. Exercise will have to be used with greater caution, and more rest will have to be secured; but the diet, breathing, bathing, etc., are the same as for simple asthma. This is a condition that is difficult to restore completely to normal, but benefit always can be secured.

Heart Disease. When organic heart disease is present with the asthma, either as a cause, effect, or an associated condition, certain modifications of treatment will be necessary.

The diet must be limited in quantity to maintain weight and strength to the correct point; and a day on a fruit diet should be taken every three or four weeks, even though the symptoms may not particularly require it. When on the milk and fruit diet, three quarts of milk a day

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are generally enough, and some can get along with even less. In taking baths, extremes of temperature, either hot or cold, and sudden changes of temperature are to be avoided. Nevertheless, cool baths should be used regularly, as they are of considerable assistance, by their tonic effect upon the heart, nerves, and breathing apparatus, and especially upon the factors involved in superficial circulation. The exercises used are carefully graduated so that slow but regular progress is made. Walking will meet all exercise requirements for a considerable time in most cases, particularly if there are hills to go over. But the lighter special exercises for asthma practically always can be used. If one is careful to avoid too hurried heart action, distress in the heart region, blueness, dizziness and disturbed rhythm of breathing, symptoms of heart strain will be avoided; the lighter exercises will be found generally beneficial.

Dropsy. If dropsy from any cause is present with asthma, absolute rest will be necessary for a time until most of the liquid is eliminated. Then exercises such as are employed in heart cases may be used. When

fasting, no water should be taken for a day or two, and only small quantities at a time and in total thereafter. The limited milk and fruit diet generally can be used but special attention is given to skin activity. When the dropsy is not due to heart disease, local or general, heating compresses (cold wet cloths covered with dry flannel and an impervious material for establishing immediate warmth and maintaining it), continued to the sweating stage are very helpful, and cabinet baths and sun baths also are useful. Care is to be observed not to continue a cabinet bath too long, and over-treatment of any kind must be avoided. The patient should feel better after each treatment. If he does not, he probably is getting too much treatment.

Drug Habit. While it is not, strictly speaking, a disease, the drug habit must be considered as a possible complication of asthma if the latter has been treated by medical methods. In these cases all eliminative measures are to be used well toward the limit of the patient's strength during the fast in order to eliminate quickly the drug from the body, though in many cases the craving can be controlled to

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better advantage by the fruit juice fast, during which the patient is allowed small amounts of fruit juice as desired. Cabinet baths may be given daily for several days, and enemas may be used twice a day. Plenty of water is drunk, and all the fresh air possible is secured. Long walks, if the patient can stand them, are of much assistance, particularly in combating the mental craving for the drug. Frequent short walks may be preferable in many of the weaker cases. The drug is discontinued entirely at the start of the treatment, unless the patient is in such condition that he could not stand strenuous eliminative measures. Particular attention should be given to suggestion. The patient should be encouraged in every way possible, and the suggestion frequently given, both directly and indirectly, that he has the strength of body and will to overcome both his habit and his disease. Neutral baths may be used daily unless a cabinet or other sweat bath is given. The diet and other measures are similar to those used in uncomplicated cases.

Tuberculosis. If asthma is complicated with tuberculosis the treatment is directed mainly

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toward the latter condition. This being the case it cannot properly be considered in this book. The main points, however, are short fruit diets, the milk diet, fresh air, sun baths, rest, and graduated exercise, with much care taken to keep the bowels free from fermenting and putrefying food waste.

TREATMENT OF REFLEX CAUSES

It will be remembered that asthma sometimes may be reflexly excited by abnormalities in other parts of the body. In these cases, of course, most of the treatment is to be directed toward the causative condition; and as these may be many, it would be impossible to cover them all in detail in a book of this scope. However, a few suggestions will be of value.

Tonsils and Adenoids. When enlarged and infected tonsils create a reflex asthma, the general treatment for asthma usually will be effective in correcting the tonsillar abnormality. A heating neck pack, applied nightly, will be of additional assistance, providing the chest is protected from the cold. This is similar in method of application to the heating

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chest pack or compress, previously described. The same treatment is valuable in cases of adenoids. But in older children or adults it is in some few instances advisable to remove these by operation, as quicker results are secured and the general treatment of the asthma will prevent a recurrence.

Nasal Polypi. Where nasal polypi or septal spurs are present, operation frequently is the best treatment, though if one can secure the services of a "finger surgery" osteopath the defect may be completely remedied without trouble and by entirely bloodless means.

Digestive Disorders. Where digestive disorders are a reflex cause the fasting included in the general treatment usually will be sufficient to correct them; but particular care must be observed with the diet, and overeating carefully avoided.

Sexual Weakness. Where sexual abnormalities are a reflex cause, continence is necessary. In fact, both physical and mental sexual excitement must be avoided. Alternate hot and cold sitz baths also may be used, and particular attention is given to spinal exercises. The mind may be kept away from sexual matters by

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keeping it busy with work, play, and treatment.

Hay-Fever. Hay-fever as a reflex cause of asthma need not be considered here as it is covered in detail in the next section of this book.

RECAPITULATION

A brief outline recapitulation is given here in order that the patient may be able to keep his plan of treatment well in mind, and to serve as a ready reference.

General Treatment of Asthma:

Fast five to fifteen days, repeating if necessary. Acid fruit diet may be used as a substitute. Milk and fruit diet until relieved. Fruit and vegetable diet may be used as a substitute.

Enemas as necessary.

Fresh air at all times.

Deep breathing daily.

Sun baths daily: substitutes—hot immersion or cabinet baths, or radiations by the mercury vapor lamp when obtainable.

Air, dry friction, and cold water baths.

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General and special exercises and walking; walking only, during the fast.

Rest and relaxation; nine hours or more of sleep.

Hopeful, confident, mental attitude; avoid destructive thoughts or emotions.

Spinal treatments: Substitute—hot spinal compress and stretching exercises.

Electricity when needed.

Modification of Treatment in Complicated Cases:

Emphysema: Less exercise.

Heart Disease: Limited diet; avoid extremes of temperature in bathing; and graduated exercise.

Dropsy: Rest; but little water while fasting; limited diet; stimulate skin activity, using care if the dropsy is due to heart disease; and graduated exercise.

Drug Habit: Concentrate on eliminative measures; and special attention to suggestion.

Tuberculosis: Treat this disease rather than the asthma.

Treatment of Reflex Causes: (In addition to treatment for the asthma itself)

Tonsils and Adenoids: Cold neck packs.

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Nasal Deformities and Polypi: Operate, or "finger surgeon" osteopathic treatment.

Digestive Disorders: General treatment sufficient.

Sexual Weakness: Continence, and alternate hot and cold sitz baths.

Hay-Fever: See next chapter.

CHAPTER VII

Hay-Fever

WHEN considering the name of this disease one might think that it is a fever due to hay, yet fever is only slightly present, if at all; and while hay may be an exciting cause in some cases, in others it has no effect. So you can see that it is of little value to have an ailment, whatever it may be, designated by a certain name.

Hay-fever is so called because it was originally supposed to be due entirely to the smell or pollen of fresh hay.

While the disease has been mentioned in medical literature for several hundred years it was not until 1819 that a serious study was made of it. An English physician, Dr. John Bostock, who had the so-called 'hay-fever,' made quite an investigation of it, and others have continued the study of the disease up to the present time. Dr. Bostock thought it was

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due to the effect of heat and light rays, as he had the form of the disease that occurs in the early summer. We now know that these have nothing to do with hay-fever except in so far as they stimulate the growth and maturing of pollen.

The term hay-fever is used to designate a series of severe catarrhal symptoms of the nose and eyes, which occur periodically every year. When the condition extends to the bronchial tubes it is called hay-asthma. There are two forms of the disease: one which occurs approximately in the period from May to July and is generally called rose cold or June cold, and another which occurs from July to October and is called hay-fever or autumnal catarrh. I stated that there are two forms of the disease, but as a matter of fact the symptoms are the same, the differences being in the time of occurrence and in the exciting causes. There may be considered a third form, as to time of occurrence—that being present in some degree throughout the year. This is the rare form, the second one named being by far the most common form.

It is now generally accepted that the excit-

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ing cause of hay-fever is the pollen, or the protein in the pollen, of certain plants. One class of plants causes the rose cold, and another class the autumnal catarrh. Pollen catarrh would be a better name for the disease, and would cover both the early and late varieties; but as hay-fever is the common name I shall use that term. However, after the disease is well established various odors and the usual season seem sufficient to excite the acute attacks, though there may be infinitesimally small quantities of the pollen to serve as the flame that starts the attacks, even in these instances.

While there can be little doubt that pollen is the exciting cause of hay-fever in most cases, it is not a fundamental cause, else why should it be that only a comparatively small proportion of people are affected? The majority of people are totally unaffected by the pollen. These are the more nearly normal persons, in certain respects at any rate. Those who have hay-fever are abnormal before they can have symptoms of the disease. This matter will be discussed further in the chapter on causes.

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Hay-fever is similar in many respects to asthma. There is the same congestion of the mucous membranes, the discharge of mucus, and the nerve irritation. If the symptoms of hay-fever were present in the bronchial tubes one would be very likely to have asthma, or if the symptoms of asthma were present in the upper air passages one would in all probability have hay-fever. In fact, the two conditions alternate in some cases. In these cases, on one occasion the patient will have an attack of hay-fever and on another occasion, under similar circumstances, he will have asthma, but in this latter case it is called hay-asthma. In many cases the two go together if asthma is present at all.

There is one distinguishing feature of hay-fever, however; and that is this: the patient usually is susceptible to only one particularly exciting cause or source of irritation or to one type of such. In most cases of asthma, any one of a number of exciting causes may produce an attack, but in hay-fever it usually requires the pollen of some one certain class of plants. Over a hundred plants were examined by one investigator who found that

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twenty-five grasses and seven other plants were found to be exciting causes, some operating in one case and some in others. It is for this reason that susceptible individuals are afflicted in the spring or in the fall, depending on the time that the pollen of the particular plant or plants which affects them is in the air.

Covering all the characteristics of hay-fever, we may say that it is an annually recurring acute inflammation of the upper air passages and eyes, and sometimes of the bronchial tubes also, which is excited by the poisonous effect of the pollen protein of certain plants upon peculiarly susceptible individuals.

Just what constitutes this susceptibility will be discussed in the next chapter.

CHAPTER VIII

Causes of Hay-Fever

IN this chapter will appear many conditions and factors that we of the "natural school" of healing consider to be the real causes of hay-fever. We do not deny that some of the factors presented by the medical scientists have more or less direct causative effects. We do claim, however, that some conditions they ignore have more direct causative action than those they hold as leading causes. And it is some of these important conditions that largely make for susceptibility, which otherwise is not fully accountable.

Susceptibility. This matter has been the cause of much discussion and controversy among practitioners of the healing art. Why is it that some people develop one disease and others another? This is quite readily explained in some cases, but in others it is very difficult. Heredity is the refuge taken by many when they are unable to explain susceptibility other-

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wise; and while it no doubt plays a part it is not a full explanation, for someone had to have the condition first. (See Causes of Asthma.)

In regard to hay-fever, searchers after causes were "up a tree," so to speak, for a long time, until in 1856 when a Dr. Blackley began a series of experiments which seemed to indicate that it was caused by the pollen of certain plants. This view was not generally accepted, however, until 1903 after further experiments by Dunbar. Now there seems to be some reason to believe that other substances, such as animal fur, down, feathers, etc., may produce similar attacks, but these hardly can be called genuine hay-fever. But whatever the exciting cause, susceptibility is still to be explained, for all people are not affected. A partial explanation of susceptibility to hay-fever has been advanced by medical men. It has remained for natural schools of healing, however, to pursue the matter to its ultimate cause and, as always, we find that cause to be wrong habits of living.

While there is still some disagreement in the matter, the most complete and most reason-

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able explanation advanced by medical textbooks is that susceptibility to hay-fever is produced by the sensitizing and anaphylatoxic action of the protein contained in pollen (and possibly in a few cases, by other substances as mentioned above), which action is made possible through abnormal permeability of the mucous membranes and defects in the mucous secretions.

This statement will no doubt require considerable explanation for most of my readers, and the question still remains as to what produces the abnormal permeability of the mucous membranes and the defective mucous secretions. I shall try to make these matters plain to you in this chapter. In order to do so I shall have to note some general facts first.

All proteins are composed of a non-toxic and a toxic part. During digestion of a protein the two parts are split so that the toxic part is freed, but this is done slowly, and under normal circumstances further digestion soon renders the toxin inert. Normally, foreign proteins enter the body only through the alimentary tract, and when digestion is normal and the mucous membranes intact none of the

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protein toxin is absorbed, so it can do no harm. If, however, a foreign protein is injected into (enters) the cells and fluids of the body undigested or only partially changed, it injures the cells in such a way that they are thereafter more permeable to that protein and are also stimulated to produce a ferment that will rapidly digest the protein. The latter reaction will be seen to be a normal one. The undigested protein is foreign to the tissues, so a ferment is produced to digest it. This process of producing the ferment and rendering the tissues more permeable is called sensitization. It is possible for this sensitization to be inherited to some extent; but that it rarely is in the case of hay-fever, is proved by the fact that the disease practically is never seen before five years of age. The hay-fever sensitization is, therefore, nearly always if not invariably acquired.

After a person has been sensitized to a certain protein a reinjection of that protein after a suitable interval will produce severe acute symptoms. This reaction is called anaphylaxis. It will occur only after the injection of the particular protein which produced the sensi-

tization in the first place. So a person who has been sensitized by the pollen of a certain plant will exhibit the anaphylactic reaction, or hay-fever, only when the pollen of that same plant or one of a similar plant or group of plants reaches his tissues.

In order to produce sensitization the foreign protein must enter the cells and fluids of the body unchanged. Thus it will be seen that sensitization, unless artificially produced by direct injection, really depends on defective action of the digestive fluids of the body and on abnormal permeability of the mucous membranes; for the mucous membranes are protective, the same as is the skin, and under normal circumstances will not absorb a substance not in solution. I shall refer to this again a little later.

Let us now consider the process that takes place in pollen sensitization. During the warmer seasons of the year when plants are growing the air is filled with pollen. Anyone who lives where these plants grow will be exposed to the pollen. It has been estimated that from five to ten pollen grains are inhaled with each inhalation into the nasal cavity, and

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about the same quantity reaches the mouth and the membranes of the eyes. This amount is equivalent to 18,000 pollen grains per hour or 180,000 in a day of ten hours. Pollen is very scarce inside a house where the windows are closed or nearly so. This number seems like a large amount, but since it takes ninety million ragweed pollen kernels or granules to weigh one gram (less than one-thirtieth of an ounce) it will be seen that 180,000 are not so very much after all. But that number is sufficient to be effective, for one-two-hundredths of a grain will produce symptoms, and it requires over fifteen grains to make a gram. When the pollen grains are inhaled into the nose or mouth and when they reach the eye they come in contact with the secretions of the mucous membranes.

It has been discovered that the human blood and all secretions of the membranes normally have considerable digestive ability for proteins. Normal nasal secretion shows a decided bactericidal power, probably due to this digestive ability. The nasal secretion in most people gradually digests the pollen protein into harmless substances, the process being so slow that

only minute quantities of the toxin are present at any one time, and these soon are rendered inert. Under normal circumstances practically no protein is absorbed. However, under certain abnormal conditions which interfere with the normal digestive function of the nasal secretions and increase the permeability of the membranes, foreign protein will be absorbed in sufficient quantity to lead to sensitization. Some of these conditions are: insufficient nasal secretions, such as in dry catarrh, a lowered quantity of normal digestive enzymes, either because of reduced secretion or impairment of metabolism; or stenosis (partial stopping) of the nasal canal through polypi, enlarged turbinate bones, hypertrophied (enlarged, thickened) mucous membranes, excessive mucous discharge, etc., all of which permit an abnormal accumulation of pollen.

Accidental inhalation of unusual quantities of pollen also may be a cause. Any wrong habit of living may have a causative effect, through reducing the tone of the membranes and making them more permeable. When any of these conditions are present, undigested pollen may be absorbed through the mem-

branes and reach the cells and fluids of the body, producing sensitization as previously described. This sensitization spreads to other tissues as the pollen protein is disseminated by the circulation, but it remains the strongest and stays the longest in the tissues first affected.

When the same pollen protein which caused the sensitization again reaches the sensitized cells—in the next or any following year—these cells pour forth the specific digestive ferment which the sensitization caused to be formed, with the result that the protein is rapidly dissolved, and then, being in a state of solution, it is still further absorbed. The symptoms which appear will depend on the quantity of pollen in the atmosphere, the quantity of protein which reaches the tissues, and the rapidity with which it is split into its non-toxic and toxic parts, as these conditions govern the strength of the toxic portion. The more concentrated the toxin the more severe the symptoms. Since the protein must reach the sensitized cells, it will be seen that unless the same abnormalities which permitted sensitization in the first place are still present, the

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pollen protein could not reach the affected cells and no symptoms would be produced. This is the reason that by using the proper methods one may avoid the symptoms of hay-fever even while in a sensitized condition. This sensitized condition gradually wears off, however and so long as the body is kept normal re-sensitization will not take place.

When the protein does get through the membranes and is split up so that the toxic portion is released, the nerve-endings are irritated, and the sneezing, itching, burning, etc., are produced. Inflammation soon results, and the mucous discharge is largely increased. All this is simply Nature's method of washing out the pollen. This makes breathing through the nose difficult, and mouth breathing results only when the same irritation occurs in the pharynx, larynx, and, possibly, the bronchial tubes. The eyes are affected in the same way as is the nose. As the poison is carried through the body by the circulation, the general symptoms of hay-fever appear, such as skin eruptions, temperature, and general depression. Hay-asthma may be produced either through the pollen reaching the bronchial tubes directly by in-

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halation, or indirectly through the circulation.

The pollens which have been found to be most effective in producing hay-fever symptoms are given below:

For rose cold or June cold:

NAME	MONTHS PRESENT
Meadow foxtail	May to July
Sweet vernal grass	April to July
Crested dog's tail grass	June to August
Slender fescue	May to August
Red fescue	June to August
Meadow fescue	June to August
Common barley	June to July
Ray grass	June to August
Timothy, Cat's Tail	June to August
Low spear grass	April to October
Kentucky blue grass	May to August
False red top	June to August
Rye	June to July
Wheat	June to July

For autumnal catarrh:

NAME	MONTHS PRESENT
Ragweed	July to September
Great ragweed	July to September
Starwort	August to October
Oxeye daisy	June to September
Common thistle	July to October
Canada thistle	July to September
Blackeyed Susan	June to August
Goldenrod	August to September
Indian corn	July to August

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Some patients are more susceptible than others, depending upon the degree of abnormality in the mucous membranes and their secretions and their general vitality and resistance, particularly the condition of the nervous system. Not all are susceptible to the same pollens, those having a rose cold rarely having autumnal catarrh, or vice versa. The common type in the United States is the autumnal type, beginning in August and lasting until October or until the first frost. Susceptible individuals will react at any time of the year, however, if they are brought into contact with the pollen which affects them. Unless the pollen or pollen-bearing plant is artificially preserved, the symptoms will be produced only at a certain season each year.

The sensitizing and anaphylatoxic action of the pollen protein is only the exciting cause of the disease, however, as I already have mentioned. The real fundamental causes are the wrong habits of living which interfere with the normal condition of the mucous membranes and their secretions, and which lower the resistance of the body so that sufficient protective elements against the protein poison are

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not elaborated by the tissues, and which affect the nervous system so that it becomes very irritable.

To be sure, attacks do not occur unless the exciting cause is present. For instance, attacks are unknown on the ocean and in certain sections of the country. This being the case, one might naturally inquire as to what advantage there would be in considering other causes. If some means were found to combat this cause, that would seem to be all that would be necessary. But unfortunately we cannot always control our environment nor can we always completely change it. These plants will grow and the pollen may float long distances, so that one is seldom certain that he will not be exposed even if he is fortunate as to be able to take a vacation during his hay-fever time and seek a more favorable location. Frequently, much time and money is lost in trying to evade hay-fever. In the chapter on treatment you will read of some of the measures which have been tried to protect the mucous membranes of the nose or to combat the poisonous effect of the pollen, some of which have been partly successful and others not at all. Even if there

were discovered some local treatment that would be infallible, the real trouble would not be corrected, the susceptibility still would be present; and if hay-fever were prevented from developing there would be a strong likelihood of some other abnormal condition appearing.

Therefore, it is wise to seek the predisposing causes in order that these may be removed and the person rendered really immune to the pollen, not because of some local application but because of the integrity and stability of the nerves and other tissues. That such predisposing causes must exist is proven by the fact that normal persons are unaffected by the pollen.

As in the case of asthma and most other diseases, the causes, then, can be divided into predisposing and exciting. The exciting ones already having been discussed, we shall now consider the others. The predisposing causes of hay-fever are quite similar to those of asthma. We have the neurotic tendency, the wrong habits of living, the possible spinal subluxations, and perhaps the uric-acid diathesis.

The neurotic tendency plays a part, because such persons as possess it are more likely to

develop unusual changes in the bodily secretions. The nerves also are more easily irritated, so that the presence of even a small amount of poison may produce severe symptoms. Such persons are more easily sensitized. It would be well, perhaps, to call attention to the fact that a neurotic person is not necessarily of a nervous temperament, but he does suffer from depletion of nerve energy, frequently from a lack of nerve food. This prevents normal reaction of the nerves, and stimulation or irritation which would produce one effect in a normal person might produce almost any effect in the neurotic.

The uric-acid diathesis does not play such an important part in the causation of hay-fever. Nevertheless, if an excess of acid is present in the body it will have an aggravating effect.

Spinal contractures, of muscles or ligaments, or subluxations from any cause, either accident or wrong habits of living, will interfere with proper nutrition of the nerves and proper transmission of impulses over them, and thus may prevent normal action of the cells of the nasal mucous membranes. These spinal conditions are seldom the sole predisposing cause

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of hay-fever, but if present they should receive attention along with the other causes.

We find in the case of hay-fever, as we did in asthma, that wrong habits of living are the most important predisposing causes. They may produce spinal contractures or subluxations, a neurotic condition or tendency, or an excess of uric acid, and they always produce toxemia, nerve irritation, and lack of tissue tone. One may think that he has been pretty careful in his habits of living, but if he has hay-fever he may know that he has been delinquent in some respects. It is not always sufficient merely to avoid wrong habits of living; one must make aggressive and constructive use of *right* habits of living. A person who has built his body to a high degree of perfection in every part is not going to have hay-fever. I do not mean one who merely has developed his muscles, but one who also has developed his nerves, his organs, and all his tissues.

It will not be necessary to consider here in such detail wrong habits of living and what I mean by them, as they were quite fully covered in the chapter on the causes of asthma, which see. If you already have read it, it will do no

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harm to review, and if you have not, it will be advisable to do so. There are a few special points, however, to which I wish to call your attention here.

In the matter of diet, overeating and an excess of starches and sugars are the most likely of the diet errors to produce hay-fever. These dietetic errors soon give rise to catarrh, and catarrh, of course, is only one step removed from hay-fever, especially in those people who have a special tendency to this form of trouble. The inflammation of the mucous membranes interferes with normal nasal secretions, produces nasal stenosis or more or less blocking, and renders the membranes more permeable. But any dietetic error may be a causative factor, as all of them produce digestive disturbances which give rise to toxemia and imperfect metabolism, with the results as given above.

Lack of exercise may predispose to hay-fever, because it allows the tissues to lose their tone, particularly delicate tissues like the mucous membranes. They become weak, irritable, and lacking in resistance, so that they are quite permeable to the pollen in the air.

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An excess of exercise may produce much the same condition, through the resulting exhaustion; but this rarely occurs, as few people over-exercise. The general bad effects of lack of exercise as described under "Causes of Asthma" will predispose to hay-fever, the same as they will to any other disease.

Insufficient breathing or breathing impure air is very likely to bring about catarrh, adenoids, polypi, enlarged turbinates, and other nasal diseases and malformations, all of which abnormalities produce more or less stenosis and weaken the nasal structures, thus making them more likely to become sensitized by the pollen. Lack of proper lung activity also will bring about the general toxemia, low resistance, and neurotic tendency which already have been cited as conditions favorable to the development of hay-fever.

Adequate elimination depends to a considerable extent upon proper bathing. When this is lacking, general toxemia soon develops. The resulting poisons must find an exit somewhere if the body is to continue to live; and when the skin is sluggish because of the insufficient bathing, the mucous membranes

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generally are called upon to do the work. As a result we have catarrh, colds, adenoids, etc., much the same as result from shallow breathing and impure air. The mucous membranes are closely related to the skin, and if the latter is kept active and in good condition by proper bathing, the former are very likely to maintain their health also; but when this is not done, hay-fever or some other abnormality of the membranes is almost certain to arise. Proper bathing, as I have emphasized, includes air and dry friction baths, sun baths and cold baths, as well as warm soap-and-water ablutions.

Lack of sleep, as explained under asthma, chiefly affects the nerves, and as tissue tone and bodily reactions depend on normal nerves you readily can see how such a lack may give rise to hay-fever. In fact, no part of the body can be kept normal unless it is allowed time for recuperation by securing plenty of sleep. Rest and relaxation, being modified forms of sleep, also are very necessary. One should secure complete physical and mental relaxation at some time during each day, preferably at the same time daily. The midafternoon usually will be found suitable for housewives; just

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after or instead of the noonday meal is favorable for business people. Business cares must not be taken home, or at least not taken to bed with one.

Wrong thinking may at first glance seem to have little connection with the causes of hay-fever; nevertheless, it does. Besides having the general bad effects, which have been described in the chapter on "Causes of Asthma," wrong thinking is at least partly responsible for the annual recurrence of hay-fever. After having had the disease for a year or two one comes to expect it at a certain time each year, either because others have it that way, or because that has been one's personal experience, or both. As a result, the condition is almost certain to appear on schedule time. So strong is this effect of wrong or "expectant" thinking in some cases that even when proper treatment has removed the other predisposing causes this one factor may be sufficient to produce the disease in some degree the following season by delaying de-sensitization and improvement of tissue tone. Unless one makes a special effort to overcome the mental habit of anticipating the hay-fever, some needless

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suffering will be experienced, though it usually will be materially reduced if all the other possible causes are removed or greatly modified.

All bad habits, of course, are included in the wrong habits of living which produce disease. I scarcely need call attention to the use of alcohol, as its poisonous effects are well known. Smoking needs special mention, however, for it directly affects the mucous membranes of the nose, weakening them and drying up the secretions. It also poisons the body as a whole. A bad habit which is seldom mentioned but frequently present is sexual abuse in one form or another. Not that hay-fever is a sign of such abuse; but this form of excess and abuse weakens the whole body, is particularly detrimental to the nervous system, and predisposes to any and all diseases. All too often a patient may be adhering strictly to treatment in other respects but fails to secure results because his vitality is continually being sapped in this way—all a result of ignorance and the mistaken delicacy of his physician. Avoidance of all sexual excitement, either mental or physical, might well be made a part of the treatment for any disease. Other bad habits in-

clude arguing, scolding, worrying, pessimism, etc.

Any or all of these wrong habits of living may produce the changes in the mucous membranes and their secretions that make hay-fever possible. They also will delay de-sensitization and the production of protective elements, thus perpetuating the disease. They are the fundamental causes of hay-fever, as they are of all other diseases. They are the causes which should receive the most attention and the ones which it is most necessary to remove.

Disease cannot exist in a body full of health, and the only time any contagion, infection, etc., can secure a foothold is when the bodily defences have been broken down by wrong habits of living. When they are so broken the body already lacks health and is susceptible to any disease which heredity or environment may help to produce.

Thus it will be seen that susceptibility to any disease is not due to one particular cause but to a combination of the wrong habits of living of the patient himself and of his ancestors, the environment of both, and the mental processes of both. Just as one's physical ap-

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pearance and mental traits have been molded and modified by the experience of all his ancestors, so his susceptibility to certain diseases has been developed. But just as these same mental and physical characteristics can be modified or developed through proper care and training of the individual, so can the susceptibility to certain diseases be stamped out or developed according as the person lives rightly or wrongly, and if wrongly, according to the particular wrong habits indulged in. New diseases are created by a changing environment to which the individual has not successfully adapted himself.

CHAPTER IX

Symptoms of Hay-Fever

LET a person who once has had hay-fever start to sneeze and he knows what is coming. In many cases, frequent and quite violent paroxysms of sneezing are the first signs of the appearance of the disease. It is Nature's method of cleansing the nasal passages of the offending pollen.

A variable time after the sneezing starts the nose begins to "run". There is a free discharge of a rather thin watery mucus. The nose burns, itches, and smarts, and there is more sneezing. As the inflammation increases the discharge thickens and the mucous membranes swell so that breathing through the nose becomes very difficult or impossible. Enunciation, particularly of sounds requiring nasal resonance, is also disturbed so that the speech is considerably thickened. The patient says "dose" instead of nose, etc. This symptom has been made the basis of many a joke and

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cartoon. In fact, the hay-fever victim is a favorite subject of the cartoonist, not only because of his wretched appearance with his swollen, red, and weeping eyes and nose, but probably also because he is very sensitive about his condition and easily can be angered, at which time he is considered by some to be even more amusing. But the disease is no joke to the victim!

When breathing through the mouth becomes necessary the pollen reaches the throat, setting up irritation and itching, with a dry, hacking cough, which often is very distressing.

The eyes may be affected at any time during the development of the disease. Sometimes they are affected first. They become red and tears flow. There is a sensation of heat and fullness and a feeling of small points striking upon the ball. The familiar itching and smarting sets in, and rubbing only makes them worse. These symptoms soon increase so that the eyes become much inflamed, and the discharge becomes a thick mucus.

All these symptoms may vary considerably in severity in different cases and the most severe may come on in paroxysms, gradually

improving and again becoming worse, but the sufferer is seldom free of his torment.

Owing to the continual distress the patient becomes very low-spirited and despondent. As the poison spreads through the body there is a feeling of general indisposition, languor, feverishness, loss of appetite, and restlessness at night. Sometimes there is profuse perspiration at night. The congestion about the nose and eyes produces a sense of fullness in the head, and often a headache. When the inflammation spreads to the eustachian tubes there may be a peculiar tense sensation in the ears.

In severe cases the bronchial tubes may become affected, in which case hay-asthma frequently results. Then the patient is indeed in a deplorable condition as far as symptoms are concerned.

The usual form of the disease resembles in many ways a very severe cold, but it is more persistent and there is more itching and burning than in a cold.

Unless proper treatment is adopted to remove the causes, the disease appears at a certain time each year—the time at which the

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pollen which affects that particular person is in the air—and lasts until frost.

The attacks and the tendency to them appear to lessen in old age, probably because the body gradually develops a resistance to the poison. Of course, there is no reason for any one having it up to old age if he uses proper treatment. Women are affected more often than men, probably because of their greater susceptibility to “nerves.”

But whether the patient be male or female, old or young, there is no denying that the symptoms of hay-fever are extremely unpleasant, and relief cannot be obtained too soon to please the afflicted one.

CHAPTER X

Treatment of Hay-Fever

NO matter how perfect and infallible a treatment we may have for a disease, prevention of that disease is the most important thing to consider. If every one would give due attention to the prevention of disease there would be no sickness except those abnormalities due to accident or compulsory medical treatment, such as vaccination. As I have shown in a previous chapter that wrong habits of living, which prevent the individual from adapting himself to his environment, are the fundamental causes of hay-fever, it follows that right living is the best and only preventative.

Proper diet and plenty of fresh air probably are the most important in preventing hay-fever; but regular exercise and deep breathing are very necessary, and all other phases of right living should be given due attention. Proper diet prevents the development of tox-

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emia; fresh air helps to keep the respiratory tract in normal condition; exercise and deep breathing maintain the tone and natural resistance of the tissues and aid in keeping the elimination active. These are the only preventive measures upon which any dependence can be placed.

Following their usual line of thinking, medical men have attempted to develop antitoxin for hay-fever. One of these preparations was developed by the classical method of inoculating a horse and using the serum of its blood. According to the theory of the practice this should have produced excellent results; but while it seemed to give some relief to slight cases, many cases were made worse. A simple beef serum, prepared by another experimenter, yielded better results in spite of the fact that it was not claimed to be an antitoxin. Neither yielded anywhere near perfect results. Such treatment never does. What little results were secured probably were due more to the psychological effect than anything else, though such abnormal substances injected into the blood well might excite the eliminative and defensive forces to such renewed activity

as to have a reducing effect upon the causative toxemia of the body. It was found that if pollantin was administered subcutaneously (beneath the skin), instead of being applied to the nasal mucous membranes, it acted as a poison. Why shouldn't it, since it is a foreign protein?

Unable to secure results in this way, the medical men turned to the so-called "immunization" method. Pollen extracts were prepared and the patient was inoculated at stated intervals in an effort to force the body to develop protective substances; but here again results were far from uniform. Such a method is, in common with all other forms of inoculation, simply a process of slow poisoning and never can be of any ultimate good. That the extracts are poison is proved by the fact that if a fairly large dose be given acute symptoms develop. If the extract were not fresh even small doses produced toxic symptoms. Thus the method will be seen to be attended with considerable danger. Owing to the possibility of frequent bad effects, the inventor himself says, "Hay-fever vaccines will be praised and advertised and put up so at-

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tractively that their use will become universal and soon—universally discredited.” Such methods of treating disease are a waste of time, if nothing worse, as they do not remove causes and thus can neither cure nor prevent.

In considering the rational treatment of hay-fever some consideration must be paid to the stage of the case; that is, whether it is now active or whether one has had previous attacks but is not now suffering due to its being “off season”. I shall consider the second condition first. I might say here that it would be well for the reader to go over the chapter on “General Treatment of Asthma,” as details are given there that will be of assistance in applying the measures here suggested for hay-fever. To have given all details of baths, etc., in both places would have produced needless repetition.

When one previously has suffered an attack of hay-fever, the important thing to do is to start right living *now*. If one has sufficient time before the next hay-fever season he may develop enough body purification and resistance to prevent further attacks without special treatment. In most cases, however, it

is best to adopt specific treatment from three to six weeks before the usual time for the appearance of the symptoms. These measures include fasting, the milk diet or proper solid food diet, nose and eye baths, general baths, special and general exercise, local manipulation, etc.

The usual regimen employed is about as follows: A fast should be taken for from four to ten days, or longer if much overweight, drinking plenty of water and taking an enema daily. Nothing but oranges may be taken for one or more days at the beginning and at the end of the fast, and these days may be included in the number mentioned. On fasts longer than seven days fruit juice may be used for two or three days in preparation for the absolute fast and from two to five or more days after the completion of the fast.

Fresh air is very important. Medical men may advise you to sleep with the windows shut; but while this keeps out much of the pollen it also keeps out the air, lack of which poisons the body and lowers the resistance. With a proper resistance there is no need to fear the pollen. The inside of the nose and

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the eyes should be bathed twice daily with moderately cold water. This can be done by immersing the face in a bowl of water and opening the eyes. In this way both the nose and the eyes may be reached at once in a convenient manner. General cold baths also should be used, as cold water is a great tonic, and more tone in the tissues is greatly needed.

Exercise should be confined to walking after the first two or three days of the fast, but as much walking may be taken as the strength will permit. If one feels a little weak while fasting, a moderate walk often will dispel the sensation. In any case it keeps all the functions of the body working at a more normal rate and is especially good for the circulation.

Plenty of sleep should be secured. If one has reason to believe that he is in a specially toxic condition, a steam, electric cabinet, or other bath to produce perspiration may be taken on the first day of the fast, and possibly on the third or fourth day, if the strength remains good. It is well to use these if one is overweight; though if one's strength and heart permit, much greater benefit would be derived

from a perspiration induced by exercise, preceded and accompanied by drinking hot water or hot unsweetened lemonade.

The fast may be followed with benefit in most cases by the milk diet for from two to four weeks, or longer, depending upon the weight, the amount lost during the fast, the rapidity of recovery, the general condition, etc. In any case it does no harm to take the milk for the full time of four weeks or even more, as one then will be sure of not having taken too little. As a rule, three or four glasses of milk are taken the first day after the day or days on oranges (which concludes the fast), drinking it half a glass at a time about two hours apart. Six or eight glasses are taken the second day, drinking it a glass at a time about two hours apart. The quantity then is increased a quart (four glasses) a day up to five or six quarts, depending on how much can be taken with comfort. Two oranges may be used each day, one before beginning the milk in the morning and one an hour or more after discontinuing the milk at night. After being on the milk a few days the milk may be taken in quantities of a pint or even a

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quart at a time at less frequent intervals, if this method is more convenient. If even this cannot be arranged, the milk and fruit diet as described in the chapter on "General Treatment of Asthma" may be employed.

Enemas are to be taken daily until the bowels move naturally, but the quantity and temperature of the water is gradually reduced. In most cases the bowels start to move within three or four days. Walking should be continued while fasting, and general exercise also is adopted, starting lightly but increasing regularly. These exercises are best taken in the morning before starting the milk for the day. Any exercises may be used. If one is not acquainted with exercise, suggestions will be found in the chapter on the treatment of asthma, the movements given there being excellent in case of hay-fever. Air and dry friction baths, cold baths, sun baths, and an occasional sweat bath should be employed while on milk. An air, dry friction, and cold water bath can be taken daily in any case, and the sun bath also may be taken daily if possible to arrange for it. The eye and nose baths mentioned above are to be continued. Every effort

should be made to live as normal and regular a life as possible.

The milk diet is to be followed by a normal diet of fruits, vegetables, whole grain cereals, and dairy products, observing care never to overeat, and giving due attention to all general health-building measures. Use plenty of raw foods.

If the milk diet for any reason cannot be used a special solid food diet may be substituted. The milk is to be preferred, however, and one should be sure he has a good excuse for abandoning it, in case he must do so. Sometimes it is difficult to secure a good grade of milk or to secure it at the proper intervals, or in a few cases it may disagree persistently. These cases are rare, however, but when they do exist the following diet may be used. Observe one day a week on nothing but oranges or some other acid fruit in season, eating as much as may be desired but taking the fruit unsweetened. On the other days, a diet largely of fruits and vegetables is employed, giving special attention to raw foods. Great care must be observed not to overeat, and the two-meal a day plan may be advisable. Tea, cof-

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fee, spices, smoked and pickled foods, meat (during this special treatment), and refined foods are to be avoided. Refined sugar particularly should be eschewed. Drink plenty of water. The general treatment employed while on this diet is the same as that used when on milk.

Exercises which affect the neck and face muscles often are of much assistance and may be used while fasting or while on any special or regular diet. The neck exercises stimulate the nerves of the upper air passages and also improve the circulation through this region. The chief effect of the facial exercises is on the circulation. These measures help to produce a more normal condition of the respiratory mucous membranes, and thus help to prevent the development of any of the conditions which favor sensitization with pollen, or to restore the tone of the membranes if sensitization already has taken place.

Any neck exercises may be used, but the following will be found to be particularly helpful:

1. Bend the head in all directions while resisting the movements with the hands.

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2. Take the chin in the palm of the right hand, place the left hand behind the head and gently twist the head to the right. Do the same to the left, reversing the position of the hands.

3. Circle the head to the right and to the left.

4. Support the body on "all fours" and place the head on a cushion which rests on the floor. Then allow part of the weight of the body to be supported by the head as it is rolled forward, backward, and sideward.

5. Thrust the chin far forward, then draw it far back, without raising or lowering the chin.

Among the facial exercises that may be used are the following:

1. Distend the nostrils, relax, and repeat.

2. Elevate the nose, relax, and repeat.

3. Draw the features to one side, then the other.

4. Close the eyes tightly, relax, and repeat.

5. Raise and lower the eyebrows.

6. Yawn, preferably with the mouth closed, opening and raising the pharynx as completely as possible.

Facial massage, particularly around the root of the nose, around the eyes, and over the

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upper lip also will be found of value, as it affects the circulation much the same as does exercise.

With the ball of a finger, massage inside the nostril, both the septal and the wing sides. A finger of each hand may be placed one on each side of the septum, and the septum then gently moved from side to side. If the nostrils or nasal mucus membrane be very sensitive, the fingers may be lubricated with a little plain vaseline.

It should be remembered, however, that these measures, while of considerable value, are but accessory to the fasting, diet, bathing, etc., which affect the vital functions of the body, purify the blood, and tone up all the tissues. Nothing takes the place of right living.

If one at present is suffering from an attack of hay-fever the following treatment may be employed with considerable benefit, though no treatment will bring the response during an attack that would result had the treatment been taken up before the attack began.

The fast is to be taken as previously described. Special attention is given to the nose

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and eye baths, which may be repeated oftener than twice a day; every hour, in fact, if it is convenient. Instead of using the cold water alone, however, the parts first should be bathed with warm water, then with the cold. If there is much inflammation it may be necessary to start the cold gradually, using water at perhaps ninety degrees at first and reducing the temperature from three to five degrees a day down to fifty degrees. Boric acid may be used both in the warm and cold baths if it seems to give more relief. The other measures used during the fast are the same as previously enumerated.

The fast should be followed by the milk and fruit diet for two or more weeks. This diet already has been described in the chapter on the treatment of asthma. The general treatment used during this diet is the same as that used with the milk diet in cases which start treatment before the beginning of an attack.

After the milk and fruit diet the special solid food diet as a substitute for the milk diet should be followed for two weeks or longer, depending on the condition. If the symptoms then are not well under control this

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diet may be continued until they are greatly relieved or a second fast may be taken with almost certain further relief. The general treatment is the same as when on milk and fruit, although the frequency of the eye and nose baths may be decreased as the condition improves.

It is important to observe care always to breathe through the nose so that as little as possible of the pollen reaches the throat. The fasting and the nose baths will help to keep the passage open so that such breathing will not be so difficult. If hay-asthma should develop, use the treatment already described for acute attacks of asthma.

Mental treatment is of considerable importance in the treatment of hay-fever. The bodies of such patients are laboring under a considerable handicap owing to the previous sensitization, and they need all the help they can obtain. The mind controls the body, and while the special physical measures used help to concentrate the mind on the removal of the disease, special attention to the thoughts is well worth while. There is a strong tendency for hay-fever patients to be quite despondent,

as their symptoms make them feel very miserable and they see very little chance for improvement under the usual treatment until the end of the hay-fever season. This despondency depresses all the functions of the body so that even the most perfect treatment and living habits cannot have the best effect. Despondency signifies the lack of hope, and without hope it is very difficult to secure results.

The perusal of these pages should re-inspire hope, and the following out of the suggestions will keep one sufficiently occupied that he will have little chance to dwell on thoughts of fear, worry, and despondency. Also, the early relief that probably will be felt will tend to change one's despondency to hope and cheer. It is well to guard the thoughts carefully, however, and if any doubtful and distressing ones appear, immediately substitute a constructive affirmation. Affirmations are merely means of giving oneself suggestion, and by constant repetition they are accepted and believed by the mind, after which the results will be manifest in the body. Tell yourself repeatedly, whether as a substitute for other thoughts or as original thoughts, that you

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can and will get well, that your body is amply able to overcome the abnormal condition, that you are getting better and better, that all your symptoms are but the measures employed by the body to overcome the disease and that as soon as they become unnecessary they will cease. Carry in mind the thought that everything you do, all the treatments you take, the food you eat, the air you breathe, and the thoughts you think, all are working together for the restoration of your health. Never allow a doubt of the ultimate outcome to occupy your attention. The body is governed by laws the same as the rest of the universe; and as long as you work with them by living rightly you cannot help but be healthy, any more than you can help becoming diseased when you live wrongly.

If the time is approaching at which you usually have an attack do not think about it, except to adopt a daily regimen that you know will prevent the development of toxemia, reduce the existing toxemia, and raise the resistance of the body as a whole and the vulnerable tissues especially. Be calmly confident that you will escape this year and hereafter

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because you have been using the necessary measures to purify the body, increase its tone, and develop its resistance. Affirm this to yourself frequently. Expect health and you will be much more likely to have it.

It sometimes will happen that complete results will not be secured the first year. Persons who have the idea of the disease strongly intrenched in their minds, who are very toxic or neurotic, who lack vitality, who have had the disease hay-fever for a considerable time, or who do not take the treatment conscientiously and confidently, may find that they have a slight attack in spite of having followed the treatment. If this should be your experience you should not be discouraged, nor should you assume that the treatment has failed. It is simply that you have not had enough treatment and the body has not had time to desensitize itself, tone up the membranes, and develop resistance. It very seldom will be necessary to take treatment more than two pre-seasons in succession, particularly if one is careful of his manner of living between seasons. This will be necessary in almost any case; for, even supposing that one prevented

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the usual attack at the first attempt and then did not live rightly during the winter, he would be quite likely again to have the condition the following year or the year after, depending on whether re-sensitization was required. You often have heard the quotation, "Eternal vigilance is the price of health," and no truer words ever were spoken. Whether you have asthma, hay-fever, or some other disease, once you have corrected it, unless you live rightly you will get it again. Like causes produce like results.

As to change of climate for hay-fever, this is not necessary under natural methods of treatment. If it is convenient for the patient to go to the mountains, seashore, or other locality where he had found himself to be free, this will be of advantage, of course, as it will give him a longer time to produce a normal condition of the body. Such a change of climate does not obviate the necessity for the special treatment; it merely enables the body to have every possible advantage in its efforts to restore a normal condition of the tissues.

If one wishes to go away but has had no previous experience as to the effects of change

of climate it would probably be best to try the seaside first. The mountains, at a latitude farther north than the usual place of residence, is usually an effective change. There is no definite rule, however, and some expensive experimenting may be necessary. If one can take an ocean voyage he will be pretty certain to escape the attack, as pollen is not present on the water.

One man in New York City found that his hay-fever was less severe when in his office in one of the upper floors of one of the city's lofty buildings. He arranged for his office to be moved to the top floor of one of the tallest buildings, and also provided a bungalow on top of the building, thus making it unnecessary for him to descend to the pollen- and dust-laden level of the street. By this plan he was able to avoid all symptoms of hay-fever during the regular hay-fever season, not correcting the tendency to it. Such a plan, however, is available to very few people. This instance is cited merely to show the effect of altitude, and the definite influence of local irritants that are ever present and unavoidable at street level.

But whatever else you do, keep in mind the

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fundamental causes of the condition and that these must be removed. Until they are removed no superficial treatment, such as change of climate or local nasal medication, will completely eradicate the tendency to have attacks. Give the body a chance and it will restore itself to normal, in which condition it will be immune to all ordinary and many extraordinary attacks—of hay-fever or other illness.

RECAPITULATION

Between hay-fever seasons: Practice all general health-building measures.

Before the usual period for an attack: Fast four to ten days (or longer).

Milk diet two to four weeks or more. Substitute: Diet largely of fruits and vegetables, with orange diet one day a week.

Enemas as needed.

Cold nose and eye baths.

General cold baths, steam or other cabinet baths.

Air, dry friction, and sun baths.

General and special exercise and walking. Walking only, during the fast after second or

third day. Massage the face and the nose internally.

During an attack: Fast four to ten days.

Milk and fruit diet for two or more weeks.

Special solid food diet until relieved.

Enemas as needed.

Warm boric acid water eye and nose baths, followed by cold boric acid baths.

Breathe through the nose.

Massage the nose, externally and internally.

General measures as above.

Special attention to mental treatment.

Change of climate (or elevation may be considered).

Hay-asthma: Above treatment, with the regular treatment for acute asthma for the attacks of difficult breathing.

[THE END]

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